Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette.

Vol. 86 February 16, 1929 No. 7

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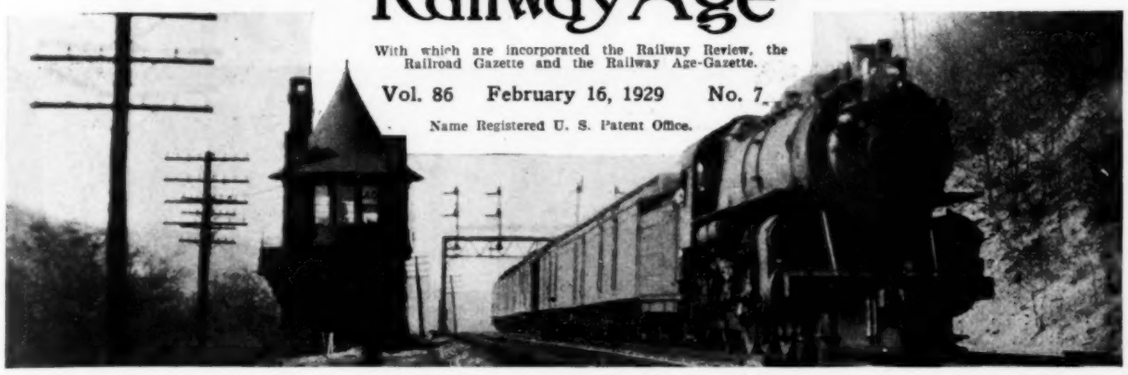

The Pennsylvania's "Manhattan Limited" near Cresson, Pa.

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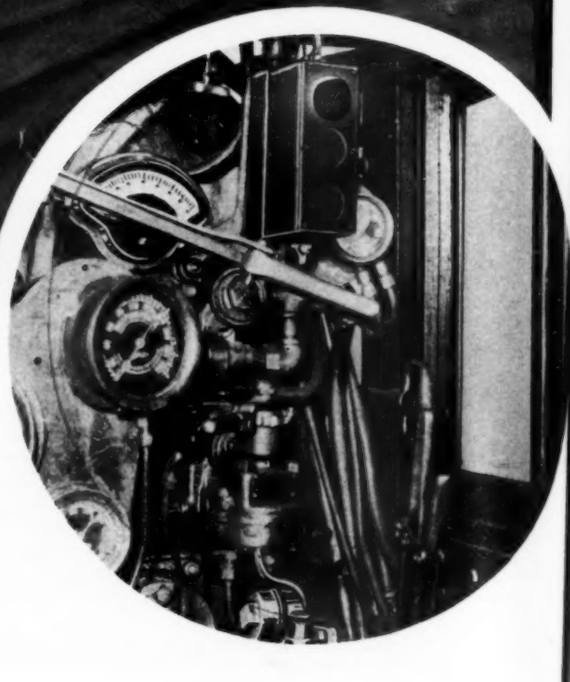


"A *Continuously Controlled*
Continuous Signal
—In Every Cab"

Railway Age

Vol. 86, No. 7 — *February 16, 1929* — *Table of Contents Appears on Page 5 of Advertising Section*

Container Service

ATTENTION is now focused upon container freight service because of the hearings which have opened in connection with the Interstate Commerce Commission's investigation into these practices on American roads. It is therefore interesting, at this time, to note advantages claimed for the container services of British railways. In the February issue of the "Railway Newsletter", the official news publication of the British railways, these advantages are set forth as follows: Absolute door-to-door service; reduction in handling costs; reduction in packing costs; minimum loss by damage and minimum loss by theft. With the exception of the first, since roads in this country do not give store-door service, all of the foregoing advantages were urged at the Washington sessions of the hearing, by witnesses for those American railways which now provide container services. The British publication continues to say: "The container has taken a very definite place in the development of railway transport and by means of it the railways are winning traffic back from the road." It is to be expected that the I. C. C. hearings will result in a further understanding of the potentialities of the container in railroad service and what, if any, practical objections must be met before the device can be more generally utilized.

Protecting the Contractor Against Himself

IT has been the practice of some railroads to furnish certain materials entering into structures built under contract. There are various reasons for this. In the case of portland cement, for example, it expedites the routine of conducting tests and simplifies the arrangement under which the quantity of cement used may be varied from that required under fixed proportions or when applying the water-cement ratio. One railway has found it of advantage to furnish construction material of an entirely different class and for another reason. Nearly every construction engineer has had experience with the contractor who will gamble with fate by making but limited provision for the unforeseen in the construction of cofferdams for bridge substructures. With good luck this policy is fruitful of a larger profit, but with bad luck the contractor spends his anticipated profit for new cofferdams and the work is delayed. The railroad in question has met this tendency by specifying in its contracts for work of this nature that it will furnish the lumber to be used in bracing cofferdams, and by providing only heavy timbers for such use is assured of substantial construction. As second-hand material is usually available for this purpose, the cost is not great, and a considerable degree of added insurance against trouble and delay is obtained at a moderate outlay.

Information for Superintendents

IN general, the day for sweeping and system-wide operating improvements is passing. Most roads have picked up the obvious loose ends and effected economies thereby. But this does not indicate that matters should rest there. There is still room for improvement on almost any division. To bring about this further improvement, it is essential that the superintendent be supplied with current information as to the results of his efforts. He must know, from day to day, what he is accomplishing, with all the detail possible, if he is to continue the plan of economical operation. Of course, in a general way, a competent superintendent knows whether or not his division is being operated efficiently; but the peak of efficiency can only be attained by supplying him daily with various checks upon his operations. It is only in this manner that the small leaks and wastages may be brought to light and corrected. In the aggregate, the small inefficiencies represent a most respectable outlay that may well be saved at the cost of some clerical labor. An increasing number of roads are giving their superintendents "something to chew on," in the way of daily operating statistics. The results obtained, as have been outlined in the *Railway Age* on numerous occasions, have been such that the roads using the plan are continuing it enthusiastically and amplifying and extending it. There is no longer the feeling that statistics are the plaything of the theoretician. Instead, operating men are realizing more and more that operating statistics possess a cash value, when properly used.

Proper Perspective

MUCH of the operating improvement of recent years may be attributed to the changing viewpoint of superintendents and their staffs. Instead of regarding their operations from a purely local standpoint, they have been taught to consider them from a system basis, resulting in greater co-operation between divisions. Continuing along the same lines, the general manager of an eastern railway stated recently that outside perspective would prove valuable on many roads. He cited instances of railways that had taken on operating executives from other roads and immediately showed improved operations. The frequent recurrence of this performance proves that there is something to what he says. Operating officers should not permit their horizon to narrow until they are no longer able to view their railroad objectively. There is no such thing as a perfectly operated railway and, if there were, it would require constant attention to keep it so. However great an improvement may have been made, it must be continued and enlarged upon if the goal of maximum operating efficiency is to be approximated.

A detached viewpoint must be maintained if flaws are to be detected and corrected. Complacency has little place in an operating officer's temperament.

Lighting Systems for Gas-Electric Trains

THERE is a trend toward the operation of gas-electric equipment in trains of three or four cars, and because of this, the problem of lighting these cars effectively is now receiving much attention. Railway electrical engineers have not as yet considered that sufficient development work has been done in this field to warrant the adoption of any standard as recommended practice. A light-weight axle-generator system has been tried out on many rail cars which are operated singly, and also to a more limited extent on gas-electric trains. The Chicago Great Western has recently applied a two-kilowatt automatic gas-engine generator set in the engine room of its new "Blue Bird" train operating between the Twin Cities and Rochester, Minn., in which the most striking departure from common practice is the choice of a 110-volt head-end system. This voltage permits the use of standard electrical accessories. Another feature of this installation is the automatic starting and stopping of the lighting plant by the operation of the control switches in the cars. The fuel consumption at half load is expected to be about three pints of gasoline per hour; while at full load (2,000 watts) it is expected to reach 3.8 pints per hour. Operating service records of this equipment will soon throw some light on the reliability and economy of automatic gasoline engine-driven generators for train lighting as compared to the other systems now in use, and will also provide service data concerning 110-volt train lines, and the use of 110-volt lamps, fans and perhaps other equipment on trains.

Cars Damaged in Freight Yards

AT a recent meeting of the Chicago Car Foremen's Association, the "constant bombarding" caused by the rough handling of cars in freight yards, particularly noticeable at night, was said to be reminiscent of a battlefield. The opinion was expressed that, except for comment like "That was a good one," or "Hit it again," little attention is paid to the damage that is being done. While this statement is doubtless somewhat exaggerated, there is a substantial element of truth in it, and the interests of the railroads as a whole require that this attitude of indifference be replaced by a keen desire on the part of all concerned to co-operate in minimizing loss due to rough handling. While the primary responsibility rests with the operating department, the car department also is definitely involved. In one terminal, the rough handling situation was attacked vigorously, and, by taking steps to have all cases of rough handling reported promptly by train yard car inspectors to the car foreman and then to the superintendent, the amount of equipment damaged was reduced from 200 cars a month to 90, with every indication that the latter figure would be still further reduced. On a few roads, it is now the practice to require police officers on duty at freight yards also to report cases of rough handling. The switching crews are between two fires, namely, an urge for the rapid handling of cars, particularly during heavy business periods, and a fear of being charged with rough handling owing to excessive switching speeds. In freight yard operation, however, as in most other phases of human activity, reasonable care brings results quicker in the long run than reckless haste. If cars come together at too high a rate of speed, the couplers may not lock, which will require additional car handling, this also being necessary when cars are damaged due to the high speed of impact. The magnitude of the damage claims paid to shippers annually by the railroads is known. Some idea can also be obtained of how much it costs to repair equipment damaged so badly in freight yards that the cars have to be sent to the repair tracks. A vast amount of unseen and cumulative damage to equipment also occurs, however, and railway operating officers cannot afford to overlook this fact in setting yard switching speed limits for maximum efficiency and economy and seeing that these limits are adhered to.

What Price Competitive Motor Coach Lines?

ON every side are heard rumors that this or that independent motor coach line, frequently a large system, has been or is about to be acquired by a railway. There is no doubt that many of the independent companies are for sale to the railways. Those roads which recently have let it be known that they are planning to co-ordinate railway and highway service in their territories have been flooded, literally, with offers from independent operators to sell out—at a price. Unfortunately, the price customarily borders, at least, on the exorbitant. Some lines with equipment worth $50,000 or less have been offered for sale at $100,000 or more. In such cases the excessive price is justified, in the view of the would-be sellers, by the operating certificates which they hold, some of which are thought to carry with them an effective monopoly of highways covered. Recent developments, however, indicate that the value to a railway of motor coach operating certificates covering routes on which it proposes to operate, may not be so great as some of the independents holding them appear to think. The regulatory commissions of both California and Pennsylvania have granted to railways the right to provide highway service in replacement of railway service from station to station on routes over which independent operators already hold certificates. Furthermore, a circuit court in Missouri, in a recent decision, is considered to have dealt a blow to the "monopolistic" features of the motor coach regulatory law in that state by ordering the commission to grant an intrastate certificate to a third line, between Kansas City and St. Louis. These rulings are removing some of the obstacles in the way of motor coach operation with which the railways have been contending.

Annual Stores Meetings

IT has become a common practice on many railroads in the last ten years for the stores department to hold annual meetings, at which the chief stores officer and his assistants, including certain of the clerks and foremen, as well as the district, divisional and traveling officers, gather from all parts of the road to discuss their work. It is customary to hold these meetings in the city where the road has its headquarters, or at one of the larger shop points, and they frequently continue

for two or more days. Almost invariably important officers of other departments address the business sessions.

Meetings of this kind should be encouraged for the effect they have in stimulating interest, in dispelling misunderstandings between men engaged in similar work, in disseminating information and co-ordinating effort. Their value depends, however, to a considerable extent, upon the way in which they are conducted. The practice on many roads is to assign members in advance of the meeting to prepare papers upon topics selected by program committees and of devoting the meeting to the presentation of these papers. Frequently the topics are of a general nature, such as some of those considered at national conventions, and are not of special local interest. Even when they are of specific interest they are likely to be more or less stereotyped and are lacking in the information needed to meet the problems which face the store officers from day to day and which meetings of this kind are calculated to solve.

In contrast to this plan, other roads employ the conference plan, in which topics are prearranged as before, but where the officers bring their files of correspondence and their records to the meetings and discuss more or less informally the facts and figures relating to their work. If papers are presented, they are in the nature of reports on what the road has accomplished in some branch of stores work or what should be done to improve the service. Meetings conducted along these lines stand out conspicuously for the decisive results gained. It might be well, therefore, for those stores departments that are getting ready for this year's meetings to check their procedure and choose a plan that will insure the best results.

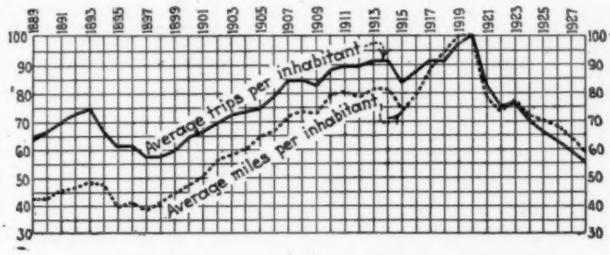
The Decline in Passenger Traffic

IN the first ten months of 1928 the number of passengers carried by the Class I railways of the country declined 6.2 per cent below the corresponding total for 1927; in this period there was also a reduction of 6.4 per cent in revenue passenger-miles. On the basis of these figures, passenger traffic for the entire year 1928 will amount to approximately 788,000,000 passengers and 31,635,000,000 passenger-miles. These figures represent reductions below the peak year of 1920 of 37.9 per cent and 33.2 per cent respectively.

The losses which have occurred in railway passenger traffic in the last eight years, however, fail to portray the gravity of the situation. As will be seen from the table of passenger traffic statistics, the number of passengers carried in 1928 was smaller than in any year since 1905, while the number of passenger-miles in 1928 was smaller than in any year since 1909. In other words, as regards the number of passengers carried the railways are operating on a traffic basis of 24 years ago, while in terms of passenger-miles they are operating on a basis of 20 years ago.

In this period the population of the continental United States has been steadily increasing. From 1906 to 1928 the population increased 40 per cent, yet in this period the number of revenue passengers carried actually declined. Likewise, from 1910 to 1928 population increased 30 per cent, while revenue passenger-miles declined.

The seriousness of the passenger traffic situation confronting the railways is vividly indicated by the chart, based on the last two columns in the table, which relates population figures to figures of passengers carried and of passenger-miles, and thus shows for the average inhabitant of the continental United States the annual number of railway trips and the average annual distance traveled on the railways. In 1928 the average inhabitant of this country traveled 263.60 miles on the



Index Numbers of Passenger Traffic per Inhabitant, 1889-1928 (1920 equals 100)

steam lines, a decline of 182.46 miles, or of 41 per cent, below the peak of 446.06 miles reached in 1919, and a lower average annual mileage than in any year since 1903. In other words, the railways are back to the basis of 25 years ago in the mileage use of their passenger facilities by the average inhabitant.

Still more striking, however, are the figures showing the average number of trips per inhabitant, appearing in the fourth column of the table. In 1928 the average inhabitant of the United States made 6.57 trips on the railways. Passenger traffic statistics of the Interstate Commerce Commission are available as far back as 1889, and in this entire period of 40 years there is no figure as small as the 1928 average. In other words, as regards the number of railway trips made by each inhabitant of the United States, the railways are operating on the traffic basis of more than 40 years ago.

These facts are of peculiar significance when considered with reference to various regulatory policies

Passenger Traffic Statistics 1889-1928

Year	Passengers carried (millions)	Passenger-miles (millions)	Population (millions)	Per inhabitant: Trips	Per inhabitant: Miles
1928	788	31,635	120.0	6.57	263.60
1927	840	33,798	118.6	7.08	284.91
1926	875	35,673	117.1	7.47	304.54
1925	902	36,167	115.4	7.82	313.46
1924	950	36,368	113.7	8.36	319.78
1923	1,009	38,294	111.7	9.03	342.85
1922	990	35,811	109.9	9.00	325.87
1921	1,061	37,706	108.4	9.78	347.70
1920	1,270	47,370	106.4	11.93	445.12
1919	1,211	46,838	105.0	11.53	446.06
1918	1,123	43,212	103.6	10.84	417.16
1917	1,110	40,100	102.2	10.86	392.47
1916	1,049	35,220	100.8	10.41	349.55
1915	986	32,475	99.3	9.92	326.90
1914	1,063	35,357	97.9	10.86	361.06
1913	1,044	34,673	96.5	10.81	359.26
1912	1,004	33,132	95.1	10.56	348.40
1911	997	33,202	93.7	10.65	354.41
1910	972	32,338	92.3	10.53	350.49
1909	891	29,109	90.7	9.83	320.97
1908	890	29,083	89.1	9.99	326.50
1907	874	27,719	87.4	9.99	316.98
1906	798	25,167	85.8	9.30	293.20
1905	739	23,800	84.2	8.77	282.60
1904	715	21,923	82.6	8.66	265.41
1903	695	20,916	81.0	8.58	258.27
1902	650	19,690	79.4	8.19	248.09
1901	607	17,354	77.7	7.81	223.20
1900	577	16,038	76.1	7.58	210.67
1899	523	14,591	74.8	6.99	195.07
1898	501	13,380	73.5	6.82	182.05
1897	489	12,257	72.2	6.78	169.79
1896	512	13,049	70.9	7.22	184.09
1895	507	12,188	69.6	7.29	175.17
1894	541	14,289	68.3	7.92	209.29
1893	594	14,229	67.0	8.86	212.47
1892	561	13,363	65.7	8.54	203.50
1891	531	12,844	64.4	8.25	199.57
1890	492	11,848	63.1	7.81	187.89
1889	472	11,554	61.8	7.64	187.03

and to public demands affecting the railroads. Unlike industry in general, with its increasing consumer demands, mass production and a consequent opportunity to reduce unit costs, the railways are faced with a declining demand for their passenger services. This fact, accompanied by the pertinent adjuncts of retardation in the growth of freight traffic and increasing tax and wage levels, warrants most serious consideration in connection with demands which are made for increased passenger service and reduced freight rates, and in connection with the public policy which is to control the development and operation of competing and subsidized forms of transportation.

Educating the Public on Highway Crossing Protection

MORE than 2,271 standard Signal Section, A.R.A., flashing-light or wig-wag type, automatic highway crossing signals were placed in service during 1928. Although these signals afford an arrestive indication when a train is approaching, many automobile drivers disregard the indication either because of a lack of understanding of the danger, or because there is no definite requirement fixing the proper action to be taken. In case of an accident, a railroad may avoid responsibility by establishing the fact that the signal was in operation. However, this does not restore the lives that may have been lost. It is evident, therefore, that some effort must be made to educate the public concerning the purpose of automatic highway crossing signals and the meaning of the indications. The suggestion has been made that a small leaflet, giving this information, be enclosed with the license card sent to each automobile driver. Such work can best be handled by some national body, such as the American Automobile Association or the American Railway Association.

In addition, there is much educational work to be done by individual railroads. Placards explaining the protection afforded by these signals, and showing the indications in colors, should be posted in passenger stations and in public buildings, wherever practicable. Officers of the operating, signal and safety departments should give brief talks at meetings of automobile clubs and other civic organizations. Illustrated talks to children in grade schools and brief lectures in high schools will be of great benefit. Publicity in local newspapers, including abstracts of these lectures, accompanied by proper illustrations, can frequently be arranged for if handled diplomatically.

Some railroads, as for example, the New York, New Haven & Hartford are providing exhibits of highway crossing signals in passenger stations at important cities on the system. These signals are in operation and are accompanied with large signs explaining their purpose and the meaning of the indications. One of the signs reads as follows: "This signal at railroad crossings is operated by approaching trains and indicates danger. Do not attempt to cross while it is flashing."

By means of measures such as those herein outlined, the public will gradually be educated to appreciate the protection afforded by automatic highway crossing signals. A reduction in the number of accidents and loss of life will surely follow. More railroads might well pursue educational programs. Every railroad officer and employee should also exert his best efforts in his local community.

Either Direction Operation On Multiple Track Lines

FOLLOWING the publication of reports and articles describing the operating benefits resulting from either-direction operation on each track of double-track lines, a number of roads are now preparing to adapt this practice to certain of their lines. This type of traffic and the schedules of trains under which this method of operation can be used to the best advantage have been discussed in these columns. Consideration will here be given to the safety measure that should surround train movements under this practice. On the ordinary double-track line, automatic block signals are provided for rear-end protection and for the spacing of trains moving in the normal direction of traffic.

Except in emergency cases trains move according to time-table schedules and under signal indication, the few train orders issued being more for information than for the direction of train movements.

If this established system of double-track operation is to be disrupted in order to make certain moves on the reverse track as a regular daily practice, consideration should be given to several important factors. When a movement is being made on the opposite track, the automatic block signaling on that track is, of course, ineffective in providing protection against head-on collisions or in spacing trains. In other words, the movement must be made under train orders and manual block.

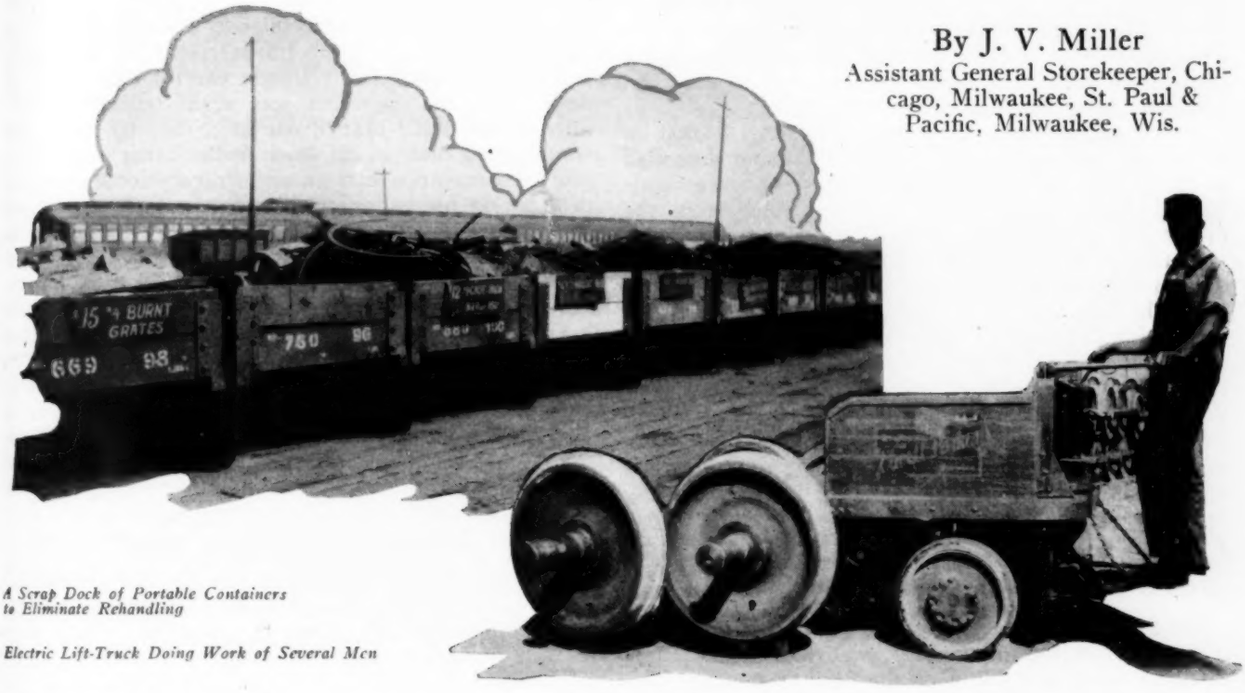
Such operation is, of course, covered by the rules, and if carried out frequently the employees involved should become familiar with the execution of each detail. Nevertheless, several roads are providing additional facilities to afford added protection and prevent accidents resulting from errors in the handling of train orders in such movements.

A complete system of protection of this character is in service on the 20 miles of double track on the Illinois Central between Kankakee, Ill., and Gilman, where a complete interlocking, with No. 18 crossovers in each direction, is provided at intervals of approximately five miles. Interlocked traffic direction signals, without written orders, govern train movements in either direction on either track, automatic signals being provided for following movements in either direction on either track. On the Texas & Pacific, the dispatcher system is being installed for the control of power-operated machines for the main-line switches as well as the signals for directing train movement in either direction on each track of 72 miles of double track. Other roads, such as the Chicago, Burlington & Quincy, have extensive mileages of double-track signaling on which is superimposed a system of manual block signals at the towers to direct movements on the left-hand track, these latter signals being controlled by electric check-locking to prevent conflicting signals being cleared, as well as to check the fact that the block is clear. In a fourth method of protecting reverse traffic movements, as employed on the Missouri Pacific, time releases are utilized at non-attended stations where crossovers are located so that train crews can throw the switches manually and obtain the necessary signal protection for reverse movements, as authorized by train order. It is thus evident that different types of signaling are now available to permit reverse running to be practiced with entire safety as well as to eliminate the delays occasioned by the handling of train orders.

Milwaukee Finds Profit in Lift-Truck Operations

Saves over one hundred handlings of many supplies by using portable container methods

By J. V. Miller
Assistant General Storekeeper, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.



A Scrap Dock of Portable Containers to Eliminate Rehandling

Electric Lift-Truck Doing Work of Several Men

NOT less than 75 per cent of the work of the stores departments consists of the handling of materials; yet until a few years ago the major efforts toward more economical operation were directed along lines other than those of handling materials. Some of the more progressive roads are now beginning to see the great possibilities in improved material handling methods, not only in handling railroad material, but in the transfer of L. C. L. freight and the loading and unloading of through freight as well.

Not many years ago practically all materials used on the railroads were handled by man power with two-wheeled push trucks and wheelbarrows. The gasoline tractor made its appearance at the larger terminals about 1910 and the saving was tremendous; yet its adoption has been slow, and even today it is doubtful whether there is a railroad which has more than one-third of the number of tractors that it can use economically.

The lift-truck method of handling materials has been used in a limited way for the last 20 years but for the most part, it has been restricted to the transfer of materials within an individual plant. Recently paper manufacturers have developed the practice of shipping paper cut to size on skids, which was formerly boxed in case lots. One skid now carries about 4,000 lb. of paper, which formerly required six or eight cases, with a resulting saving in lumber, freight, etc. Some concerns have had lift trucks in their plants for many years, but few have been getting the maximum service from them. Many plants could keep from three to a dozen men busy a long time figuring out new applications of the lift truck and its method of handling materials, for it must always be borne in mind that more than half of the production cost in the average plant is in the handling of material itself. In the stores department of the Chicago, Milwaukee, St. Paul & Pacific, new applications of lift-truck handling are being developed every week.

Revolutionize Brake Shoe Handling

A brake shoe weighs over 23 lb. Prior to handling lift trucks and skids, all our brake shoes were handled by wheelbarrow in units of 15, each shoe requiring from three to seven separate handlings from the sand in the foundry to application on the car. They were transferred from the sand on the foundry floor to a wheelbarrow, wheeled by hand into the freight car or dumped in the gondola. When received at the district store, they were picked up from the floor by hand and wheeled, 15 at a time, into the storehouse, where they were again handled in piling them for storage in stock. In shipping them to the division store, they were again picked up by hand, transferred, 15 to a wheelbarrow, wheeled into a car and deposited, usually in a hand-built pile. At destination, they were again picked up by hand from the floor of the car, again wheeled into the storehouse,

* From a paper presented before the annual meeting of the Materials-Handling Division of the American Society of Mechanical Engineers in New York, December 3, 1928.

and again hand-piled. The operations of picking up, laying down, wheeling, and piling were again repeated in their delivery to the repair track.

In the lift-truck method, 150 shoes are now piled on a skid, or ten times the number handled by a laborer in a wheelbarrow. These are deposited once and for all on the skids on the foundry floor, and when a skid is filled, it is picked up with a lift truck and carried into the box car for shipment to a district store. A single operator with a lift truck loads 150 brake shoes in about one-fourth of the time it used to take the wheelbarrower to load 15. Once the brake shoes are placed on the skids, they can be loaded into the freight car at such speed with the electric lift truck that an entire carload of 24 skids is ready for shipment in less than one hour from the time of starting to load.

At the district store, the entire carload of 84,000 lb. of brake shoes is unloaded from the car and deposited in the proper section of the storehouse or stores platform in less than an hour. In shipping from the division or local stores, the skid loads of brake shoes are transferred quickly from the storehouse to a car or to repair tracks as required. If shipped to a local store, the skid load is removed from the car and transferred to stock or to the repair shop by one laborer with a hand lift truck, and transferred to stock or to the repair shop. A study of one unit of 6,000 lb. reveals that under the old method it took 175 manual operations, while with the lift truck it took but 7, a saving of 168 operations. When the millions of brake shoes which railroads consume yearly are so handled, a tremendous saving for both manufacturer and railroad will be effected.

One Man Carries 1,750 Lb.

An 8½-in. air pump weighs approximately 1,750 lb. The usual practice in shipping one of these air pumps on most roads is to lay it on the floor of the car. This takes from three to five men, while it takes from three to five men to unload it at destination and transfer it to the storehouse, and finally, three to five men are required to carry it to the locomotive shop.

With the present system of handling, the pump is bolted to a skid after it is repaired or when received from the manufacturer. In all handling of this pump thereafter, one man with a lift truck of either the power or hand type can easily load or unload the pump, into or out of the car, in one minute. Considering the large number of locomotive air pumps in service and their frequent transfer to and from locomotives, it is safe to say that this one operation alone would show a large return on the investment of a hand-lift truck, if it was used for nothing else. Under the old method, there is also a risk of personal injury which is entirely eliminated by the new.

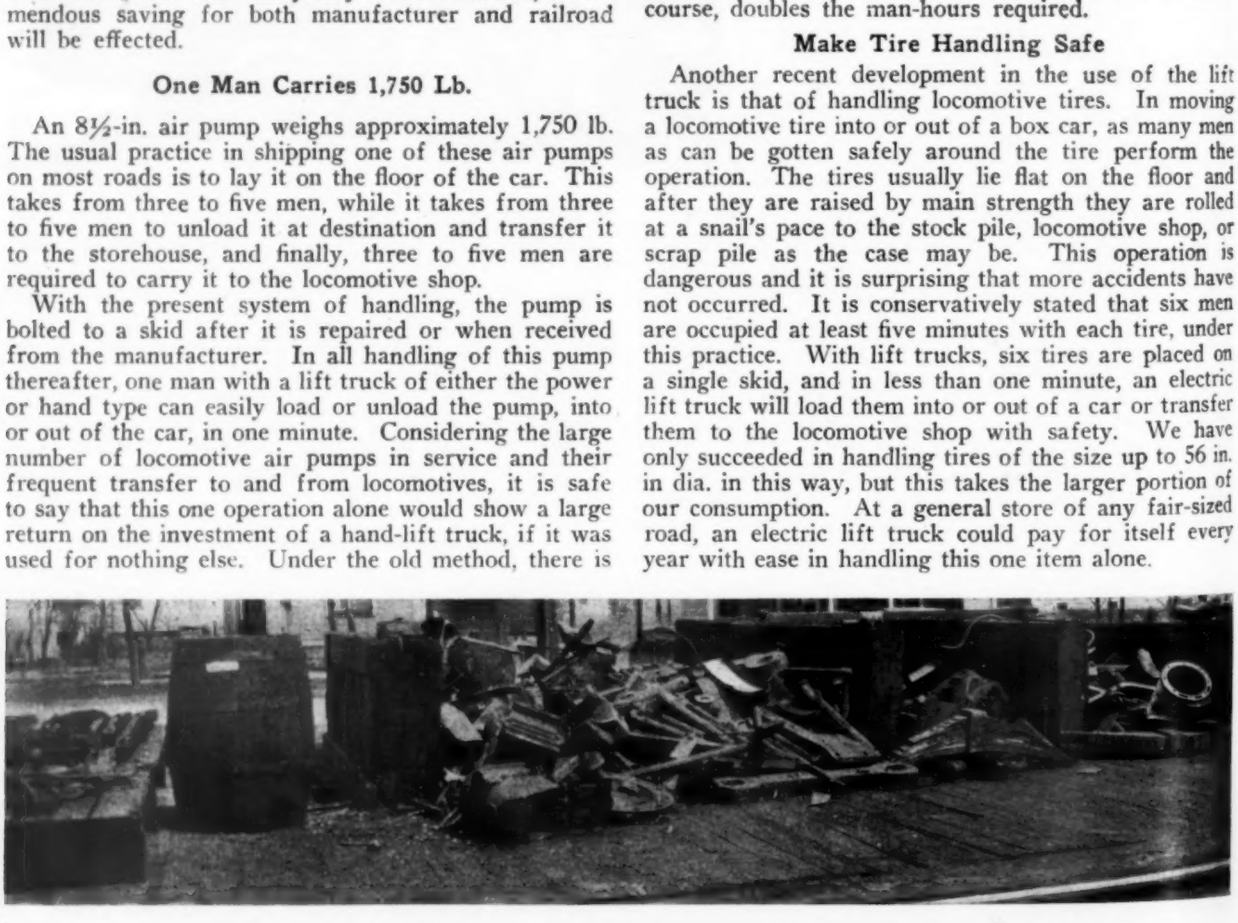
Ship Brake Beams on Skids

A brake beam is one of the clumsiest items of stock. We have developed a skid which now carries 20 brake beams. It is feasible to handle 30, but 20 is a better unit for our operations. The Milwaukee manufactures and repairs practically all of its own brake beams and these were formerly placed on the drying racks, after being painted, transferred by hand to wagons, hauled to the storehouse, and again transferred from wagons to the stock pile by hand. In shipping, they were transferred from the stock piles to a wagon, moved by hand to the car, and again transferred from the wagon and piled by hand in the freight car for shipment. At destination, the operation was again repeated by removing the brake beams, one at a time by hand, and transferring them to the stock at the using point. The same movements are required in reverse order on bad-order brake beams, practically all of which are shipped back to headquarters for repairs or as scrap. On a lot of 20 brake beams, this makes a total of 200 manual operations.

According to present practice, these same 20 brake beams are handled on a single skid and 10 manual operations accomplish the same results, at a saving of 190 manual operations per lot of 20 brake beams. This is based on using only one man in the old system of handling. As these brake beams weigh over 80 lb. apiece and are awkward to handle, it is usually found that two men are employed in handling them, which of course, doubles the man-hours required.

Make Tire Handling Safe

Another recent development in the use of the lift truck is that of handling locomotive tires. In moving a locomotive tire into or out of a box car, as many men as can be gotten safely around the tire perform the operation. The tires usually lie flat on the floor and after they are raised by main strength they are rolled at a snail's pace to the stock pile, locomotive shop, or scrap pile as the case may be. This operation is dangerous and it is surprising that more accidents have not occurred. It is conservatively stated that six men are occupied at least five minutes with each tire, under this practice. With lift trucks, six tires are placed on a single skid, and in less than one minute, an electric lift truck will load them into or out of a car or transfer them to the locomotive shop with safety. We have only succeeded in handling tires of the size up to 56 in. in dia. in this way, but this takes the larger portion of our consumption. At a general store of any fair-sized road, an electric lift truck could pay for itself every year with ease in handling this one item alone.



Scrap Dock at Local Store Before Skids Were Introduced—Several Rehandlings and Sortings Required Before Final Disposal

Air hose are used in large quantities, and handled in many different ways on different roads. A careful time study reveals that it takes one man an hour to unload 400 air hose, counting one operation only. A special skid developed for handling hose has a capacity of 400 hose, but is normally loaded with only 300. The hose are placed on skids immediately after mounting and final inspection in the shop, and from then on they move in units of 300 through the general storehouse, and to division stores, local stores, etc., as required, and usually until actually applied to the car. In almost every case a new hose replaces a scrap air hose, and this is returned to the storehouse on skids in the same manner. At least $2 is saved on every skid load of 300 handled.

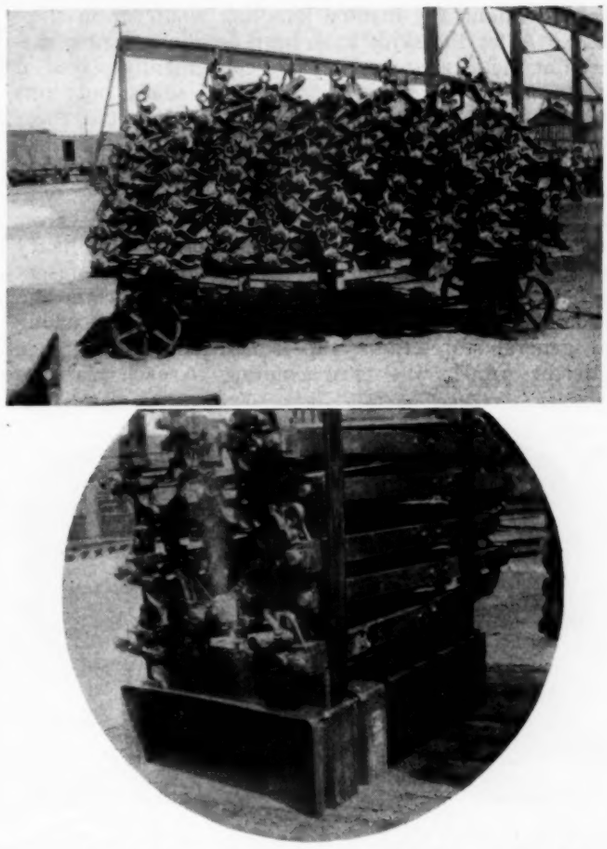
Brass Never Touches Ground

Car journal brasses must be handled carefully in order to avoid injury to the bearing surface. They were one of the first items to be handled on skids on this road, and the operation is now so complete that the brasses never leave the skid from the time they are placed on it in the factory until they are removed by the man who applies them.

The journal brasses are received from a local foundry by automobile truck. Formerly they were just piled on the floor of the truck and unloaded by hand truck to the proper location in the storehouse, from which they were shipped in the same way. Three men were used and it took 1 hr. 25 min. to unload a truck load of brasses. After unloading, the trucks returned empty to the manufacturer. Scrap brasses and brasses to be relined were loaded into box-cars and shipped to a point near the foundry, as that plant has no trackage, and the brasses were then reloaded into the trucks and transferred to the plant. More than 100 carloads of scrap brass were returned each year. The average time consumed by the truck for the delivery of brasses and the return of scrap brass was 3 hr. 25 min.

Placed in Less Than Five Minutes

Today this material all arrives in skids, four skids to the truck, each skid holding approximately 3,500 lb. of brasses. At the general store, an electric lift truck unloads all four skids forming the truck load and places them in the proper position in the storehouse in less than five minutes. The auto truck then moves approximately 300 ft. to the scrap stock, and here the same electric lift truck loads the truck with scrap brass in four skids in about the same length of time. The time consumed in receiving the 14,000-lb. load of brasses and returning the scrap brasses has been cut from 3 hrs. 25 min. to approximately 15 min., a saving of 3 hr. 10 min. per truck load. No box cars are used for the return of scrap brass. A truck of this size is worth 10 cents a minute, so it is not difficult to compute the saving in this operation, which alone fully justifies the expense of the electric lift truck. Brasses are never removed from the skids until they reach the point of their application to the car.



Upper—Old Method of Handling Brake Beams Requiring 200 Manual Operations
Lower—New Method Where Beams are Shipped and Stay on Skids Until Used, Saving 190 Manual Operations

Clear heights underneath of 8 in. and 12 in. respectively, and a minimum of 29 in. between skid runners have been selected as standard. No overall dimension of the skids has been standardized, but they are built 33 in. wide and 54 in. long, so that they will fit three wide in a box car, and a total of 24 skids can be shipped in the car.

Skids to Cheapen Scrap Handling

A number of our heavier and more important items are now shipped by skid load to all local and district

Same Scrap Dock After Adopting Skids—Scrap Sorted as Received and Shipped by Skid Load Without Further Hand Labor

stores without any manual handling whatever in shipment. After the skids have been emptied of new material at the local store, they are conveniently placed at points where the scrap originates. Usually only one class of scrap originates at a given point, but if there is more than one class, an extra skid or two is provided, so that each skid carries only one class.

Most railroad scrap is shipped in open top cars, with everything from superheater units to brass globe valves dumped in a jumbled mass, and because of this, heavy loading of mixed scrap is rare. Under our present system, scrap is received on skids, only one class and often 3,000 to 4,000 lb. to the skid. Upon reaching the general store, this scrap is unloaded and dumped into the proper pile corresponding to each class of scrap, which is then loaded with magnets when the scrap is sold. Eventually, the scrap will remain on the skids until its sale, when it will be loaded in the cars by crane trucks without any hand operations. With this method of handling, we can load as many as 6,000 to 9,000 lb. per min., as compared with the present magnet operation, which does well if it averages 1,000 lb. per min. Of course, scrap material does not weigh as much as the new material shipped out, and it might be assumed that some skids would return empty, but there are always so many items that are shipped direct to local points and not on skids, that this more than equalizes the situation.

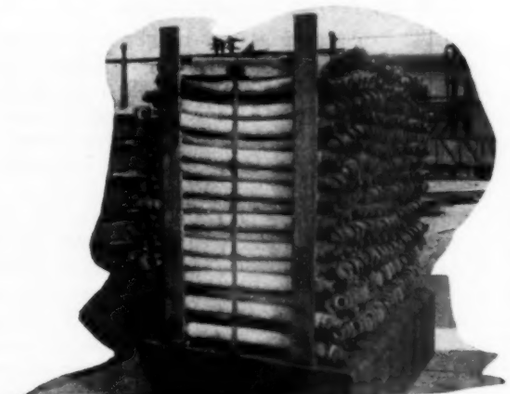
Eighty-five per cent of the 65,000 to 100,000 items comprised in railway stores, can be handled economically by the lift-truck method. Lift trucks are of two kinds, hand and powered. The hand trucks lift from ¾ in. to 3 in. The power trucks are of many shapes and sizes, lifting from 4½ in. to 6 ft., and higher if desired. The more important local points should use hand-lift trucks, because of their lower cost and less frequent use, while the larger and more important points should be equipped with the power-lift trucks. It is surprising, however, how quickly hand-lift operation grows into a power-lift operation if it is properly supervised.

Lift Truck vs. Tractors and Trailers

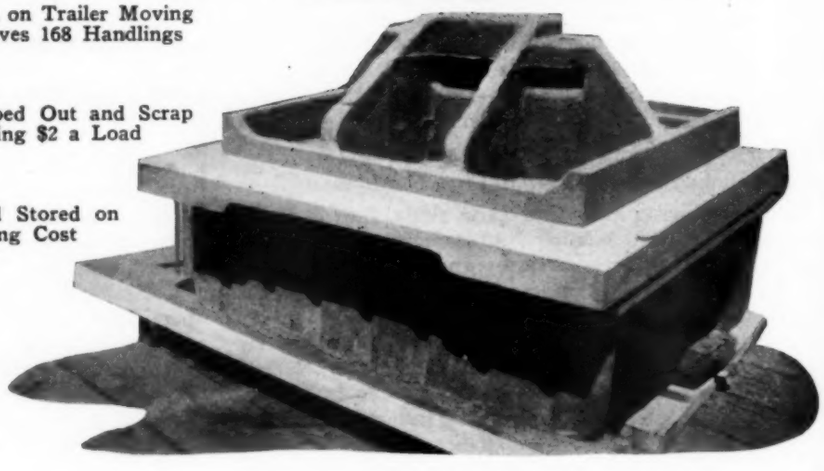
The lift truck method is not a competitor of the tractor and trailer method. Each has its own field, the lift truck for short hauls and the tractor and trailer for the longer hauls. Lift trucks are particularly suited to conditions where short, quick movements are desired, and the more they are localized the more they will return on the investment. Incidentally, more tractors are needed after putting in lift trucks, for these act as feeders for the tractor train, placing the skids directly on low trailers when a long haul about the plant is necessary.

Material handling by this method is likely to fail, however, if the management has the idea that its success depends merely on the purchase of the equipment. Each plant has its own problems in material handling, and the successful solution may require much thought. When installing lift trucks, a capable man should be made supervisor, and he should be given the assistance and backing which a new development requires. Above all, the initial cost should be secondary to net return on the investment. If there is sufficient work to be done, the saving over the new system of handling will be more than double the investment annually.

Upper Left—Skid Loads of Brake Shoes on Trailer Moving to Main Store for Shipping Intact—Saves 168 Handlings



Upper Right—New Air Hose are Shipped Out and Scrap Hose Brought Back on Skids, Saving $2 a Load



Lower—Heavy Casting Shipped to and Stored on Skid at Destination to Save Handling Cost

What Is Depreciation?

Lessening in worth as applied to valuation should not be confused with accounting depreciation reserves

By H. E. Hale

Vice-Chairman, Presidents Conference Committee, New York

THE last word has certainly not been written on the much-discussed subject of depreciation. However, in this article the writer will endeavor to bring out such facts and pertinent information on the subject as have been developed to date. It is safe to say that much of the confusion of thought in the past has been clarified by recent Supreme Court decisions, which have been worded so clearly that the very mode of expression precludes further doubt on the points at issue.

There is one compensation for those who have to struggle with this question today, for it appears that the question of depreciation was difficult to settle even in the far-off days of the Roman Empire where valuation was well developed. It dealt to a large extent with the value of slaves and slave property, with which we do not have to deal today, but perhaps the Romans were fortunate in not being concerned with the valuation of railroads.

Many of the valuation principles established in the law of the Roman Empire have been re-established in the law of the United States. Vitruvius, the engineer in charge of the waterworks at Rome during the time of Augustus Caesar, in his books on engineering, referred to the question of depreciation as follows:

"No walls made of rubble and finished with delicate beauty—no such walls can escape ruin as time goes on. Hence, when arbitrators are chosen to set a valuation on party walls, they do not value them at what they cost to build but look up the written contract in each case, and then, after deducting from the cost one-eightieth for each year that the wall has been standing, decide that the remainder is the sum to be paid. They thus in effect pronounce that such walls cannot last more than eighty years. In the case of brick walls, however, no deduction is made, provided they are still standing plumb, but they are always valued at what they cost to build."

This quotation is of particular interest for several reasons. In the first place, this Roman engineer used the "straight-line formula" to determine the lessening of value of a particular structure and, as we have found today, it is fairly accurate for certain structures. More important, however, is his clear grasp of the facts in regard to depreciation, when he stated that certain structures do depreciate and other structures do not depreciate, a distinction which many engineers of recent times have not seen so clearly. In the second paragraph, Vitruvius also indicated that depreciation must be determined by inspection to see if the wall was "still standing plumb", which is in line with a recent decision of our Supreme Court.

This subject of depreciation is frequently approached with the statement that "All things made by the hand of man depreciate and lessen in value each year during their service life." In the broadest sense this statement may be true, but it is misleading for the period of time with which we are forced to deal.

Take, for example, a canal. When new, the many leaks cause a much swifter current against which boats are compelled to operate and a larger storage supply of water is necessary to supply the canal during dry weather. As the canal grows older, the leaks decrease, owing to the growth of vegetation and the silting process. Here is an example of a structure built by the hand of man which increases in value materially as it grows older, for the deterioration of the wooden portions of the locks has a negligible effect on the whole value.

Another example of a structure built by the hand of man which does not depreciate with age is the irrigation ditch. When these are first built, the leakage is generally very great and much of the water which has to be stored in large reservoirs never reaches the farms where it is needed. As the ditch grows older, leakage is reduced, owing to the growth of vegetation and the silting process, making the structure much more valuable rather than less valuable. This is probably one of the oldest types of structures built by the hand of man and has been used in all parts of the world, many of them having been in existence for hundreds of years.

In determining the depreciation of a canal or irrigation ditch, it must be assumed that normal maintenance will be provided because, without maintenance, these structures ordinarily would not remain in operation for more than a year or two and certainly their lessening of value cannot be based on a service life of one or two years.

Depreciation of a Composite Structure

For a composite structure, such as a railroad, the determination of the depreciation of the parts and calling the weighted average the depreciation of the whole reaches such obviously false conclusions in certain cases that this method cannot be approved. Further, the usual method of application of the straight-line formula to a composite structure assumes that the part which is depreciated, such as a tie, lessens in value an equal amount each year, which is pure assumption unsupported by facts, as the tie itself, if separated from the track, in a year, has only scrap value.

In a building, with which everyone is familiar, the depreciation or lessening of value of the parts, such as shingles, is very marked as soon as they become a part of the building, for when nails are driven into the shingles the value of the shingle itself as a shingle is reduced to scrap. The same condition is found in practically all parts of a building, such as flooring, which, when cut from stock sizes and nailed to the floor beams, is reduced to scrap value as flooring. Similarly, the brick, when placed in the foundation or chimney, is

reduced to scrap value as brick. If the actual lessening of value of these items as individuals were added up and considered the actual depreciation of the whole building, the whole building would be reduced to scrap value, even though just completed.

These same principles apply to a railroad; only the advocates of the straight-line formula do not estimate the actual lessening of value of the parts as individual parts when they are worked into a railroad, but make the theoretical assumption that each part lessens in value an equal amount each year of its service life. There are no facts to support this assumption. If, on the other hand, the straight-line formula is applied to the railroad as a whole, it is at once necessary to determine the total remaining life of the railroad. If the history of the canals is a guide, this may be fifty years, or, according to others, it may be a thousand years. This condition makes it impossible to apply the straight-line formula to the composite property of a railroad as a whole.

Supreme Court Prefers Field Inspection

On this subject, we are much indebted to the Supreme Court of the United States for clearing up another point in a recent case, when it said:

"The testimony of competent valuation engineers who examined the property and made estimates in respect of its condition is to be preferred to mere calculations based on averages and assumed probabilities." (272 U.S. 400,416).

This opinion does not clear up all questions on depreciation, but it is a long step in the right direction. It disapproves of depreciation determined by some formula based on averages and probabilities and says that the results of an inspection on the ground by a competent valuation engineer are to be preferred. The correctness of the opinion is obvious, for the lessening of value is dependent on many other things than the service life of the parts and a competent engineer will take due notice and record of these other items.

The wording of this decision seems so clear that, after reading the statement, we wonder why it was not made and followed long ago. The court assigns to the engineer the duty of performing certain engineering work when determining depreciation, such as the field inspection. This is based on the wise principle that if there is a surgical operation to be performed, a surgeon should be employed; if there is a lawsuit to be tried, a lawyer should handle it; if there is an engineering matter to be worked out, it should be done by an engineer.

One of the primary qualifications of an engineer is that he shall have that quality that when he is shown plans of a new structure or the structure itself, he can, from his own knowledge, state whether or not the structure is strong enough or is suitable for the purpose intended. When information based on formulas and other data is submitted to him, he must be able of his own knowledge to determine whether the answer is reasonably correct.

One noted bridge engineer, who had this quality developed to a remarkable extent, is said to have been able to detect inadequate members in bridge plans without taking time to make the mathematical caluculations to determine the actual strains. Other engineers who have this quality developed to a marked degree are the maintenance engineers of the railroads. At wrecks and washouts these engineers are forced to rebuild structures with improvised materials, and without taking time to calculate the strains, decide whether they are safe to permit the passage of trains. These men make remarkably few mistakes.

Wrong Conclusions Reached by Straight-Line Formula

From an engineering standpoint, let us look at the result of applying the straight-line formula to determine depreciation of the railroads as a whole. We have this information for hundreds of railroads and the answer obtained for fairly large railroads or groups of railroads is almost uniformly 18 per cent of the total cost of reproduction new.

Certainly this answer, on the face of it, cannot be correct, for it is known that some railroads have lessened in value materially from their condition new and others have appreciated; yet this straight-line formula, applied to the composite structure of the railroads by determining the so-called depreciation of the parts, adding them together and calling the sum the depreciation of the whole, gives a uniform depreciation of about 18 per cent. This obviously cannot be correct.

The writer was at one time in charge of maintaining two new lines, widely separated and very different in character, but which had one condition in common. They were paralleled by lines 60 years old and the new lines certainly were not as valuable as the old lines under any conditions. Many men have had similar experience with new railroads and I doubt if, after careful consideration of these new lines, they would place a higher value on a new railroad than on an old railroad which was well maintained. This refutes the use of the straight-line formula which always produces much greater depreciation for an old railroad than a new one.

Another example will illustrate the true condition: Assume there was a war on the Pacific Coast and the Department of War had to commandeer a railroad across the continent to handle munitions and troops from the Eastern seaboard to the Pacific. This eliminates all question of profits and would require the selection of the best railroad available. Assume also that there were available a new railroad just completed and an old railroad which was well maintained; certainly the department would not select the new railroad with all the "grief" connected with a new road. If this is so, then the old, well-maintained road cannot be the less valuable as a transportation instrument.

Depreciation as Recognized between Railroads

Because the valuation problem lends itself to so many theories, let us turn to actual cases where it was necessary to determine the value of a railroad accurately and where the great sums of money involved warranted the determination of the value of the property beyond a question of doubt. Since railroads were first built in this country, hundreds of them have been bought and sold and, with rare exceptions, they have been inspected by competent engineers to determine their physical depreciation, if any. Here the purchasers, when they were risking their own money and not discussing theories, followed the recent decision of the Supreme Court when it said that: "The testimony of competent valuation engineers who examined the property and made estimates in respect of its condition is to be preferred to mere calculations based on averages and assumed probabilities."

I would not like to be the engineer, who, when reporting to a bank president on the condition of a

railroad that was to be purchased, told him that there had been deducted one-half the cost of the ties for depreciation based on the straight-line formula, when the ties were in the usual condition and fully maintained in good operating condition. Without much effort, I can imagine the comments and actions of a bank president if an engineer were to tell him that all railroads lessened in value 18 per cent from condition new, based on the straight-line formula.

Many years ago, I inspected a railroad for purchase and the correct depreciation of that railroad was covered by the three following items:

(a) A liberal estimated cost of replacing all defective parts to place that road in good operating condition. (This is usually called deferred maintenance.)

(b) An estimated cost of all charges to carry the railroad without traffic until all trestles and 50 per cent of the ties had been replaced, as the road was unsafe to operate in its existing condition.

(c) An estimate of the cost of derailments which would almost certainly take place during rebuilding, owing to extreme deterioration.

This is another illustration of a case where the straight-line formula gives incorrect results and an inspection by a competent engineer is to be preferred, since it does not take into consideration any of these three essential items in physical depreciation.

A Fool's Paradise

From another angle of the depreciation question as applied to railroads, we may be living in a "fool's paradise" in that the depreciation of certain railroads may be far in excess of that produced by the straight-line formula. The canals of the United States were started with the Erie canal, which was begun in 1815 and completed in 1825. During the period of canal building, there were 4,400 miles constructed and operated, yet most of them were abandoned or bankrupt in 30 years and were superseded by railroads. This was depreciation of canals with a vengeance.

Gas-producing plants were at one time supposed to be nearing the end of their usefulness, owing to the introduction of electricity for lighting, but the use of gas for cooking has resulted in a greater demand for this product today than when it was used for lighting and a new field is opening for gas in heating, which may greatly extend the demand. Here is an industry which was materially depreciated or lessened in value and later revived by changed conditions in no way covered by the straight-line formula.

The telegraph systems were at one time seriously affected by the development of the telephone and depreciated in value materially. Later, they were revived by new methods, such as "night letters", "week-end letters" and various other improvements in service, such as automatic sending and receiving devices. The telephone companies today are faced with new inventions such as the wireless telephone and the automatic telephone exchange, which may or may not make their present apparatus obsolete, and yet the straight-line formula, as it is generally applied, does not in any way determine the depreciation due to such causes.

The writer has in mind a certain branch line of a steam railroad which at one time had a heavy and very profitable passenger business. Today, the business in this territory has increased many times over, but the passengers are carried by a new electric railway and motor coaches, while the freight and express are carried by trucks. This is a condition found today on many railroad branches which has caused the abandonment of many miles of steam railroads in recent years, and which certainly is an element of depreciation not covered by the straight-line formula when used in the ordinary way. The railroads are faced today with the competition of inland waterways, trucks, motor coaches and airplanes, the effect of which may materially depreciate branch lines or whole railroads. This can only be determined by an inspection of a competent engineer and cannot be determined by the straight-line formula.

So far as depreciation is concerned, the similarity between railroads and canals and irrigation ditches is very marked. Instead of being structures made by the hand of man which must of necessity depreciate, they actually appreciate with age when properly maintained. Their actual depreciation or lessening of value is not correctly determined by the straight-line formula, as examples here given illustrate, but is dependent principally on two conditions—neglected maintenance and obsolescence due to improved inventions or methods. These two items can be determined by inspection only and this confirms the decision of the Supreme Court previously quoted.

Depreciation Accounting

Another angle of this subject should always be kept in mind in discussing the question of depreciation, or lessening of value, and that is so-called "accounting depreciation", which has to do with reserves set up to cover the cost of replacements or retirements when certain parts of structures, or the structures as a whole, come to the end of their service lives. These so-called depreciation reserves have nothing whatsoever to do with the lessening of value of the property and fundamentally are a method of charging to operation the cost of parts of the plant in equal annual payments during the life of the part. This is the method followed in charging to operation the cost of locomotives and cars, as contrasted with the method of charging to operation the cost of a tie only when the tie is removed or replaced. Each method has certain advantages and certain disadvantages. Both are purely accounting methods and neither has anything to do with the lessening of value of the property.

Probably the best proof of the above statement is a consideration of the fire-insurance reserve which is set up by many railroads which carry their own fire insurance, for the purpose of paying for losses by fire by equal annual payments and which is for the same purpose as the depreciation reserve, namely, to spread the cost of retirements over a number of years. If one of these reserves is to be deducted from cost new to determine value, then the other reserve should also be deducted for the same purpose. However, as far as the writer knows, no one has suggested the propriety of deducting the fire insurance reserve from cost new to determine value. In fact, if the depreciation reserve could be handled exactly as a fire-insurance reserve is handled, many misunderstandings would fade away and the truth in regard to these reserves would be seen clearly.

Many accountants feel that depreciation accounting is the most accurate method. However, an accountant of national reputation recently made a very pertinent remark in regard to this subject, which is, in fact, a method of accounting by which expenses are anticipated. He said that correct accounting is simply the truthful reporting of receipts and expenditures and that of necessity, to be of any value, both must cover the same period; that is, to deduct the expenses of future years from the total revenue of this year is meaningless. If expenses were to be anticipated, then receipts should be anticipated for

the same period. This statement gives us food for thought, even though neither accounting method in any way affects depreciation when the word is used to mean the lessening of value of a property.

There are a number of eminent economists who feel that if a company charges depreciation reserves on the straight-line basis, then that company should not be permitted to charge the public a return on the property for which they claim the public has already paid, and in determining a rate-basis value the amount of the depreciation reserve must be deducted.

Court Decision Clear

In regard to this matter, the Supreme Court of the United States, in the New York Telephone Case, said: "The relation between the company and its customers is not that of partners, agent and principal, or trustee and beneficiary. The revenue paid by the customers for service belongs to the company. By paying bills for service they do not acquire any interest, legal or equitable, in the property used for their convenience or in the funds of the company." (271 U.S. 23,31,32). This decision is expressed with such clearness that its very expression precludes further argument.

Back of this position of many eminent economists, just outlined, is a sincere and correct effort on their part to prevent a company from charging the public twice for the same service. It seems to the writer, however, that this double charge can occur only when the rate of the depreciation charge is excessive and that the error, where it exists, should be corrected by reducing the erroneous depreciation rate and not by making a counterbalancing error in determining the rate-base value.

No one can deny that competent valuation engineers could determine the value of a railroad under the valuation laws of the United States with fair accuracy, even though all accounting records had been destroyed, including the record of the depreciation reserves. If this is so, then it follows that the amount of the accounting reserve does not affect value.

Deferred Maintenance

In their valuation cases, the railroads of the United States, with rare exceptions, have claimed that where a road is maintained in good operating condition there is no depreciation or lessening of value from condition new. It is interesting to note that in their dealings with each other, where actual dollars were involved, the railroads have practiced what they preach, as may be seen in contracts for leased roads.

Out of an investment of $24,000,000,000 in road and equipment, more than three billion dollars is in leased property. Of the many leases with which the writer has had to deal, all have provided that at the end of the lease the property should be returned to the owner in as good operating condition as when leased and in not a single case was there a clause in the lease that the depreciation or lessening of value should be determined and paid for by the lessee, based on the straight-line formula.

Certainly if the straight-line formula could be depended upon to determine correctly the depreciation or lessening of value of a railroad, then the attorneys and other officers would have insisted on clauses being incorporated in the leases to cover this alleged loss of value. This is a clear proof that where actual dollars are involved and not mere theories, that the straight line formula does not correctly measure depreciation or the lessening of value and that the railroads have practiced what they preach.

The Supreme Court did much to clear up this question when it stressed the importance of estimates based on inspections by competent engineers. However, in this decision, the court did not specify how the estimates should be made, but left this point to the judgment of the engineer making the inspection.

There are so many conditions which cause depreciation of a property which can only be judged by an inspection that possibly no very rigid rules can be made and the question of how the estimates should be made must be left largely to the judgment of the engineer. However, quite a number of engineers have outlined their views in considerable detail and have described the basis on which the estimate should be made. These statements, which follow, are interesting to compare:

(a) Henry E. Riggs describes actual depreciation as "the impairment of the investment in the physical plant, or loss of value due to the failure of the owners to make the expenditures for repairs, renewals and replacements of parts when such replacements were due and economically justified." This is usually called deferred maintenance and in the case of the New York Central at the date of valuation, Mr. Riggs estimated this at about two per cent.

(b) Cecil F. Elmes, in the Indianapolis Water case, made an inspection and estimated all the actual depreciation as the amount that would be required to restore the property, as of appraisal date, to its condition when first installed and put in practical operation. In this case, the depreciation equalled about three per cent.

(c) William J. Hagenah, in the same case, made an estimate of existing depreciation, based on actual inspection and a consideration of the probable future life as indicated by the condition found; that is, a sinking-fund method plus inspection. In this case, his estimate of the depreciation equaled about six per cent.

(d) Stone & Webster, in the case of the Worcester (Mass.) Electric Light Company, inspected the property to take into account all differences in value which would exist between an entirely new property and the property as it actually existed. In this case it amounted to about eighty per cent.

Other engineers have used the sinking-fund method without modification by inspection; for the average railroad this equals about 10 per cent.

Other engineers have used the straight-line method without modification by inspection for the average railroad; this equals about 18 per cent.

The two decisions of the Supreme Court of the United States herein quoted have simplified the whole depreciation question materially. The detailed instructions as to how the valuation engineer should make a field estimate of the condition of a property apparently is to be left to the engineer and, as this is strictly an engineering question, it could not rationally be assigned to others than engineers.

* * *

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Automatic Protection for Gauntlet Track on the L. & N.

Unique interlocked signaling layout with fire protection alarm and safety feature for track men saves over $5,000 annually

A View of the Northbound Signal at Proceed

THE Louisville & Nashville has recently installed interlocked automatic signaling to replace desk-lever interlocking for the control of train movements over a gauntlet track about 4,000 ft. long across a high trestle and a bridge over the Cumberland river in the Nashville, Tenn., terminal. This gauntlet track is on a double-track freight line used to detour through freight traffic around the congested section of Nashville. The traffic consists entirely of freight trains and light engines, from 20 to 40 movements being made over the bridge every 24 hours.

Alternating current automatic block signals were installed on this cut-off in 1920, and the signals for controlling train movements on the gauntlet track over the Cumberland river were controlled by desk-levers located in an office at the north end of the trestle, one operator being on duty on each trick. In addition to controlling the signals, these operators were required to watch the trestle and bridge for fire.

With the idea of reducing operating costs to the extent of about $5,000 a year by eliminating the operators at this bridge, it was proposed to replace the desk-lever control by interlocked automatic signals controlled by the approach of trains. These signals are controlled by circuits arranged on the same principles as those used for interlocked automatic signals at railroad crossings.

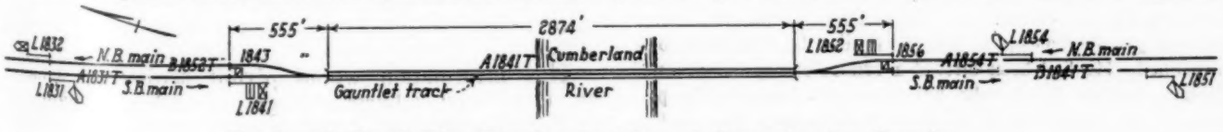
Automatic Fire Alarm System

During the day time, track and signal maintenance forces work over this territory at frequent intervals, and they can be depended upon to provide a certain amount of fire protection for the trestle. Although a watchman could be employed during the night at a cost of $60 per month, it was decided to install an automatic fire alarm system to be operative 24 hours a day. A five-cell storage battery is provided for a fire protection circuit, in order to eliminate chances for grounds on other control circuits. This battery feeds a circuit which extends across the bridge to a normally energized relay, each side of the circuit consisting of four strands of 6-amp. fuse wire twisted together. Guard rail timbers, 9 in. wide and 3¼ in. high, are located 3½ in. from the inside gage of each rail. The fuse wire for fire protection was suspended by insulated staples spaced 6 in. apart on the inner side of each guard timber.

After being in service a few weeks, it was found that the vibration on the trestle caused the fuse wire to crystallize and break. It was, therefore, necessary to provide wood moulding with a groove for the fuse wire so that it is now supported throughout its length. Through the contacts of the local relay of the fire protection circuit, a circuit extends to a line relay located in the yard office four miles away. An alarm bell with local battery is controlled through this relay so that if the fire protection circuit on the bridge, or any line circuit, is opened, the alarm rings and a yard engine with hose is sent to the bridge at once.

Protection for Motor Car Users

On account of the fact that this trestle is over 4,000 ft. long, track and signal forces using motor cars were liable to be caught on the trestle by trains. Therefore, a rule was established that flag protection must proceed all of the way across the trestle ahead of each motor car. Compliance with this rule resulted in serious delays in getting over the road. To eliminate this flagging, an automatic clockwork time release was installed at each end of the trestle, so connected that by winding the release, the signal control circuits were opened, thus preventing any of the signals from moving to the proceed position until eight minutes elapsed, which is adequate time for a motor car to travel through the gauntlet track. These time releases do not latch in the wound-up position; therefore, the operation is entirely automatic except the winding of the release. A telephone is provided in a booth at each end of the gaunt-



Track and Signal Plan Showing Location of Protection for Gauntlet

let, so that track foremen can inquire as to the general location of trains, thus preventing unnecessary stops.

Control of Interlocked Signals

The main control equipment for the signals of this plant, including approach relays, directional-stick relays, track-repeating relays, storage battery and some of the track relays, are located in the main instrument housing. The selection of the route is accomplished by the approach relays. One of these relays selects the route on the northbound main, and the other on the southbound main. These relays function immediately as the train reaches the approach circuit, clearing the proper signal for the train and holding the signals governing all opposing routes at stop.

The quick release of the plant and the prevention of signals clearing in the rear of trains, is accomplished by directional-stick relays. These relays function when a train accepts the route and passes the home signal. They prevent the signal from clearing in the rear of a train as it passes out of the interlocking limits. They also permit the releasing of the opposing signals as soon as the train has cleared the opposing routes. The circuits were designed with the idea that each signal, before displaying a "proceed" or "proceed with caution" indication, should check all opposing signals in the stop position. The signal controls are selected through circuit breakers on the opposing signals rather than through signal repeating relays.

The lights which are required on the bridge are electrically lighted and were formerly controlled by a knife-switch located in the operator's office. When the operators were discontinued, it was decided, in order to limit current consumption and lamp renewals on bridge lights, to control them automatically rather than to have them lighted continuously. A sunlight relay was installed for this purpose, which automatically turns the bridge lights on when darkness approaches, and turns them off again when daylight returns.

Power Supply

Alternating current signaling is in service on the double track, extending each direction from the gauntlet. A separate 4,400-volt single-phase power line feeds from each direction up to each end of the gauntlet, but does not run across it. The storage batteries for the control circuits of the automatic interlocking and for the fire protection circuits are housed in the old office at the north end of the trestle, and are charged from the north-end feed through proper transformers and rectifiers. The track circuits are a-c. and all of these circuits, on both sides, and on the gauntlet, that are involved in the operation of the plant, are normally fed from the north-end feed, while if this is cut off by a power failure, the feed is automatically cut over to the south-end feed.

TWO HUNDRED AND FIVE YEARS is the aggregate length of service of four veterans of the Delaware, Lackawanna & Western who have just been retired from active work by the age limit. F. W. Wilkie, locomotive engineman, though 70 years old, plans to continue the enjoyment of his hobby, pen and ink drawing, and he has joined the Binghamton Art Society, attending regular classes. John J. Ruane, a trainman, retires after 61 years' service, during which time he has never been disciplined. He had been offered a conductorship but declined. Captain William Frost, who has served 41 years in the pilot house of a Lackawanna ferryboat has crossed the Hudson River 465,536 times.

Railroad Grade Crossings Present Highway Problem

RAILROAD grade crossings represent one of the largest and most perplexing problems that must be solved in future highway programs, according to E. W. James, of the Bureau of Public Roads of the Department of Agriculture, who recently outlined for members of the American Road Builders' Association a constructive proposition to help solve the difficulty. The outline recommends that a definite classification of crossings be made, based on the relative value of their elimination to the traveling public; that a definite program for eliminating crossings of highest classification be adopted by each state and each railroad in it; that authority to create new grade crossings be restricted; that each state adopt a definite program for installing safety warning devices of a standardized type; that the cost of eliminating and installing safety devices be readjusted between the railroads and the public.

To determine which crossings to eliminate, a purely economic study should be made on the basis of time lost at crossings, Mr. James pointed out, explaining that the study should be "based on a traffic census and on computation of time losses due to that kind of motor vehicle operation that will reasonably produce complete absence of accidents at the crossings." The value of eliminating the crossing varies directly with the amount of rail and highway traffic, without reference to the hazard involved," he said. Fortified with proper data, each of the railroads in each state could plan a definite annual program for eliminating crossings according to their relative importance and the program would be defensible.

Authority to create new crossings should be confined to state highway departments or to some state public utility commission and new crossings should be permitted only where no other solution is possible at the time, Mr. James believes. At present, such authority lies usually with the administrative body authorized to open or to accept newly opened roads.

"A definite progressive program should be adopted by each state for installing safety warning devices of a rigidly standardized type or types for all highways and railroads at those crossings which must be left in place," Mr. James stated. "They may constitute gates with or without watchmen, watchmen alone, light wigwag signals, gongs or other devices, but in each case the installation and operation should be as nearly uniform as possible. "Some more or less definite readjustment of costs between railroads and public should be made for all grade crossing treatments. At present the cost of installing protective features is borne entirely by states in some cases, and in others entirely by the railroads. If a program of elimination, based on a classification, is to be founded on economic saving to highway traffic, it is logical and fair to be liberal in allotment of costs to the general public. This plan would make it possible to speed up the entire program of elimination and protection."

Mr. James recommends that each state highway department collect data on accidents at all crossings, resulting fatalities, and on the types of protected crossings.

This information would permit setting up separate urban and suburban programs, and a decision as to the effectiveness of the several types of protection where immediate elimination is not possible.

Illinois Coal Rate Hearing at Chicago

FOLLOWING the conclusion of testimony by northwestern dock interests on February 8, Attorney-Examiner William A. Disque adjourned the hearing being conducted before representatives of the Interstate Commerce Commission at Chicago at which Illinois coal operators are seeking the establishment of lower rates and the restoration of the rate relationship between Illinois coal and eastern coal moving over northwestern docks that existed prior to the lake-cargo coal case and the lake-dock cases. The case was taken under advisement, pending the filing of additional briefs by both sides, probably in May. Railroad representatives who expressed divergent opinions regarding any readjustment preceded the dock interests on the stand.

R. B. Battey, coal traffic manager of the Chicago, Burlington & Quincy, opposed existing rates and favored a restoration of the old relationship. In reviewing the decrease in shipments of coal from Southern Illinois he stated that in 1924 the Burlington handled a total of 276,910 tons of coal to the Twin Cities while in 1927 it moved only 85,976 tons.

B. J. Rowe, coal traffic manager of the Illinois Central, contended that the rates as they now exist are unfair to Illinois railroads, operators and northwestern consumers. He felt that the Commission's order in the lake-dock coal case should be modified but such modification should not be a measure of rates at points where competition similar to that in the northwest does not exist. He favored the Commission's granting the Illinois Central permission to bring about the old relationship through agreement with interested parties.

H. R. Wilkinson, general coal agent of the Chicago & Eastern Illinois favored a change in rates and suggested that the rates on coal from the northwestern docks to the consumer be increased but felt that a reduction in rates from Illinois would be better for all concerned than an increase in rates from the docks. When asked if the dock-to-consumer rate increase would be passed on to the consumer, he said he did not know but could cite several instances in which a reduction in rates did not change the price of coal. W. I. Jones, coal traffic manager of the Missouri Pacific, supported a reduction in rates. M. A. Daly, general fuel supervisor of the Northern Pacific, testified to show that this road bought about 750,000 tons of coal a year from the docks in the northwest and that it had purchased Illinois coal only under unusual conditions, the last purchase being made in 1923 and amounting to 157,000 tons.

Fred H. Behring, commerce agent of the Southern at Washington took the position that rates on coal from the east over the Southern to Wisconsin and Minnesota are reasonable and that it is not a rate situation which controls the distribution of Illinois or Indiana coal in Wisconsin, Minnesota or Iowa but that other factors over which the carriers have no control are the cause of the shrinkage of Illinois and Indiana coal tonnages in those states. However, he approved an adjustment in the tariffs.

The dock interests opposed the request of the Illinois coal operators for an adjustment of rates on coal from Illinois mines to destination in Minnesota and Wisconsin and reviewed the existing rate structure and described the functioning of the docks on Lake Superior. J. E. Chandler, traffic manager of the Reiss Coal Company, offered evidence to show that, as compared with normal years before the increase in rates, there was no substantial increase in the receipts of bituminous coal by the docks on Lake Michigan until 1927. This he attributed to the fact that in 1927 the Illinois mines were on strike almost six months and that the docks were naturally called on by the trade to help supply the deficiency caused by the suspension of mining in the Illinois coal fields.

Mr. Behring also undertook to show that for some years the anthracite business of the Lake Michigan docks has been dwindling very rapidly and that it is now almost gone. This business, he said, was largely with domestic consumers, who have turned to coke, oil and the smokeless coals, which Illinois does not furnish. During the past five years, he testified, there has been a very material increase, almost 1,000,000 tons annually, in the shipment of eastern coal via all-rail routing into the northwest, on rates which have been reduced considerably during the last five years. The testimony of the Lake Michigan dock operators further showed that those docks have practically lost all markets outside of Wisconsin and that their trade is almost entirely within 100 miles of the Lake Michigan waterfront. The rates which are paid on this Lake Michigan dock coal, it was claimed, earn for the railroads a considerably higher revenue than that earned by the same lines on either Illinois coal or all-rail coal from the east.

Coincident with the hearing, the Illinois Commerce Association, on February 5, directed its engineering section to investigate transportation conditions affecting the movement of Illinois coal, and prepare a comparison of Kentucky and Illinois conditions, for presentation to the Interstate Commerce Commission. The state commission believes the facts surrounding coal movements from Kentucky and Illinois, respectively, warrant a rate even higher than the present differential of 35 cents between Kentucky and southern Illinois.

Ticket Scalping on Decrease

A SUMMARY of the activities of the Railway Ticket Protective Bureau, Chicago, for 1928, shows that much has been accomplished in the prevention of ticket scalping and as a result few resales of return portions of tickets were made during the year. Chicago remains free from scalpers' shops and professional scalping. Some curbstone scalping of Sunday excursion tickets was started by labor agencies and by individuals, but this was brought to the attention of both city and railroad police departments and the activities ceased. Tests of hotel employees and auto bus line employees, were made during the season, but no attempt at ticket scalping was disclosed, a decided improvement in this respect over 1927.

The bureau's agents, since the beginning of the summer excursion period, had made tests to uncover ticket scalping at both Los Angeles and San Francisco. Evidence of scalping tickets issued on government request orders issued by various service departments of the U. S. navy, marine corps and army was secured. The bureau's representative arrived in San Francisco on August 1, and learned that former ticket scalpers were operating an alleged auto bus office as sub-agents for independent auto bus lines. These men were not handling the return portions of summer excursion tickets but were confining their efforts wholly to these government issued tickets.

As repeated prosecutions of scalpers had been made in state courts under the state anti-scalping law, which resulted in only fines being imposed and which failed to deter these men from re-engaging in the scalping business each succeeding year, the efforts of the bureau were therefore directed to the prosecution of these persistent offenders in the federal courts. The aid of the U. S. service department, army, navy, and marine corps was secured, as well as the U. S. Department of Justice and the United States attorney. The bureau was permitted to submit its evidence to the U. S. grand jury which resulted in an indictment being returned under sections 35 and 37, U. S. Penal Code, Conspiracy to Defraud the U. S. Government. The men were arrested and on November 28 plead guilty. One man was fined $300 and given a 30-day jail sentence while another was fined $500 and given a 60-day jail sentence.

Investigations at Government Stations

From investigations and tests made at Mare Island, Cal., Angel Island, Vallejo and Goat Island, all of which are either navy, army or marine stations, it was found that the canteens provided for the use of enlisted men were acting as ticket agents for the Auto State Company, the managers of which received a 10 per cent commission on all such tickets sold service men and that as an inducement to discharged service men this commission was divided with the purchaser of the ticket. As this was a violation of the California State Railroad Commission Public Utilities Act, evidence was secured on which to predicate a complaint against the offending auto stage line and filed with the Railroad Commission, which notified the stage company to issue a bulletin to all agents definitely instructing them as to the law's requirements.

During August and September, the bureau's representative made tests and investigations at Los Angeles and found this city to be free from professional scalping and that no suspicious advertisements of railroad tickets were being carried in any of the newspapers. Tests made of all hotels during August and September failed to reveal any scalping by employees. Warning letters prepared by the bureau cautioning against transfer of tickets were furnished all validating agents and used when occasion warranted. Train inspection by auditors failed to show any ticket scalping, other than individual transfers and fewer of these than in previous years.

A complaint regarding the broadcasting by radio of misleading information from a sending station at Shenandoah, Ia., alleged that in a talk about home seekers' tickets to California the audience was told that it was not necessary to turn in the return portion of such tickets for refund in case the holder did not wish to return, but that the return portion could be sold for about $10. The bureau's representative called on the owner of this broadcasting station who claimed to be unaware that such a statement was made and assured the representative that none would be made.

The bureau was notified of the arrest and subsequent suicide of William H. Myers, foreman of the government printing office, Washington, who had been dismissed for the theft of supplies and in whose desk was found a forged railroad plate from which railroad tickets could be printed. It was thought that this case might have some bearing on forged tickets of the Erie & Michigan Railway and Navigation Company tickets occurring on June 1, 1927, but investigations showed that the forged plate was one from which monthly commutation tickets of terminal lines could be printed, and that none had been printed. While two other employees of the government printing office were dismissed for having aided in making this plate, they were not otherwise involved and claimed they had aided Myers because he was the foreman and they were obliged to obey his orders.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 2 amounted to 946,892 cars, the largest weekly total to date this year. As compared with the corresponding week of last year, the total represent an increase of 20,630 cars but as compared with the corresponding week of 1927, a decrease of 18,772 cars. A heavier movement of coal was the principal factor in the increase in the total over a year ago. Grain and grain products, coke and miscellaneous freight showed small increases as compared with 1927. Loading in two districts—the Northwestern and Southern—was smaller than in the corresponding week of last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, February 2, 1929			
Districts	1929	1928	1927
Eastern	225,179	211,660	220,724
Allegheny	190,312	180,105	198,914
Pocahontas	57,585	50,768	60,479
Southern	149,105	149,277	156,863
Northwestern	107,206	120,488	114,433
Central Western	138,834	138,302	138,257
Southwestern	78,671	75,662	75,995
Total Western Districts	324,711	334,452	328,685
Total All Roads	946,892	926,262	965,665
Commodities			
Grain and Grain Products	49,718	53,919	46,880
Live Stock	27,508	35,262	27,728
Coal	211,094	180,656	219,076
Coke	12,481	11,368	12,248
Forest Products	59,453	69,412	67,997
Ore	8,669	7,888	11,626
Merchandise L.C.L.	245,630	249,094	252,236
Miscellaneous	332,339	318,663	327,873
February 2	946,892	926,262	965,664
January 26	926,188	902,664	943,879
January 19	931,880	884,683	936,160
January 12	914,187	907,301	942,731
January 5	798,723	754,247	933,890
Cumulative Totals, 5 weeks	4,517,870	4,375,157	4,722,324

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 2 totalled 60,878 cars, an increase over the previous week of 1,463 cars and a decrease of 4,263 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
February 2, 1929	60,878	41,437
January 26, 1929	59,415	41,420
January 19, 1929	58,175	39,556
February 4, 1928	65,141	39,954
Cumulative Totals for Canada		
February 2, 1929	281,747	189,731
February 4, 1928	308,376	179,463
February 5, 1927	293,273	176,041

A COMMISSION OF SPANISH TECHNICAL EXPERTS recently commenced a study to determine the feasibility of constructing a tunnel under the Straits of Gibraltar to connect Spain and its African colonies by rail, according to recent newspaper reports from Madrid. The commission, headed by a Spanish artillery officer planned to spend several months in Africa preparatory to the submission of a report on the project to the Spanish government. It is estimated that the work of construction would extend over a period of six years.

New York Central Merger Decision

Definitely fixes status of short lines—Some interesting problems remain to be solved

By F. J. Lisman
F. J. Lisman & Company

THE recent decision of the Interstate Commerce Commission in the New York Central merger case was foreshadowed by the writer in an article which appeared in the *Railway Age* of August 28, 1926.

The law says: "The Commission shall, as soon as practicable, prepare and adopt a plan for the consolidation of railroad properties of Continental United States into a limited number of systems. In the division of such railroads into such systems under such plan, competition shall be preserved as fully as possible and wherever practicable existing routes and channels of trade and commerce shall be maintained." Therefore, it was hardly conceivable, except to the minds of technical lawyers, that the Commission should take any other but the broad view of the Act. The Act intended that all people of the United States should be assured of approximately equal transportation facilities, the same as they are assured of practically equal mail facilities. The people resident along the short and weak lines are naturally desirous of being permanently assured of proper transportation facilities and their interests must be protected. This the Commission has done.

This does not mean that the owners of the short or weak lines are entitled to get physical value for their properties. They are only entitled to the fair "commercial value" of their property, as the Commission states, and only insofar as their lines are a public necessity and convenience.

How Short Lines Were Dealt With

Quite a number of short lines intervened in the petition of the New York Central to permanently lease, and in effect merge with, its most important subsidiary corporations. It is very interesting to note how the Commission dealt with these various applications. In the case of the Ulster & Delaware; the steam railroad of the Fonda, Johnstown & Gloversville; part of the Owasco Southern, a switching road at Auburn, N. Y.; the Federal Valley, a coal road in Ohio; the Boyne City, Gaylord & Alpena, a Michigan line; and the Chicago, Attica & Southern, an Indiana road, it held that these roads were naturally tributary to the New York Central and should be taken over within six months at their "commercial value".

In the case of the other roads; that is, the Southern New York Railroad; Delaware & Northern; Kansas & Sidell, the latter a little Illinois line, it held that these roads should not be allotted to the New York Central System because this system was not their natural connection. There are many other short lines connecting with the New York Central System which did not appear in the proceedings, but the shippers along these lines are entitled to the benefits of the Transportation Act and the benefits to accrue from consolidation.

In order to do the needful in that direction, the order in the New York Central case contains the following provision: "Acceptance of and compliance with conditions precedent herein prescribed shall not be interpreted as relieving the New York Central from the further operation of the law respecting consolidations or excusing that carrier from further responsibility for the representation made on its behalf that on appropriate occasion for considering the inclusion of so-called short line railroads, these matters will be approached by the New York Central in a spirit of cooperation looking to their solution with all due regard to the public interest." This means that the New York Central is in effect bound to acquire on fair terms any other short lines which the Commission, in the interest of adjacent communities, shall find properly belong to it.

Decision Not Unanimous

The decision of the Commission was not unanimous; there were three dissenting opinions filed, one by Commissioner McManamy who went further than the other commissioners. He thought that the New York Central application should not be granted at all until all tributary lines had been acquired by it. The following is a paragraph of his opinion: "My conception of what the Congress had in mind when it included in the Transportation Act the provision for the consolidation of railroads is that systems of railroads should be created which would adequately serve all of the territory properly tributary to each system which would necessarily include connecting short lines. Certainly Congress did not reverse public policy to the extraordinary extent of exempting railroads from the provisions of the anti-trust laws and other restrictive laws merely to make it possible for the large and strong systems to consolidate, thereby making the strong stronger and the weak helpless."

Commissioners Eastman and Taylor also filed dissenting opinions but their principal objection was to the right of the Commission to permit the entire transaction which was in effect a merger and contrary to the law which prescribes consolidation of railroads as a whole and not in part.

In the New York Central's petition for lease of the Michigan Central and The Big Four there is a provision that the value to be paid for any unassenting minority stock is to be fixed by arbitration; one arbitrator to be appointed by the minority stock-holders, one by the New York Central interests and the third by the other two. The commission has fixed this same method of arbitration for the purpose of arriving at the basis of the commercial value of the short lines, but any agreement arrived at must be finally approved by it.

Problem of Trunk Line Territory

At any rate this decision definitely fixes the status of the short lines and this situation is about to be accepted by an application which is nearly ready to be submitted to the Commission by the Baltimore & Ohio and the Van Sweringen interests, in which the New York Central will undoubtedly join and in which the Pennsylvania Railroad will, by necessity of circumstances, be compel-

led to join. This application will be to the effect that all the railroads west of the Hudson river, east of Chicago and St. Louis and north of the Ohio and Potomac rivers, and the lines running westerly from Hampton Roads, be merged into four systems. The application will contain a provision that each one of these systems will acquire all the short lines found by the Commission to be tributary to them, at a price to be arbitrated or fixed by the Commission.

There are a number of rather important railroads in this trunk line territory, the owners of which may or may not be willing to sell. Quite likely the owners of these lines may not be willing to join in any arbitration. Included among these lines are such important properties as the Delaware & Hudson; Pittsburgh, Bessemer & Lake Erie, owned by the U. S. Steel Corporation; Pittsburgh & West Virginia and the Delaware, Lackawanna & Western.

When the trunk lines application come before the Commission, that body will cite before it the owners of all these railroads and representatives of the adjacent communities for the purpose of ascertaining the natural routes of traffic and the interests of the public. To work out all the details of this will easily take two years.

One of the minor railroads, the Pittsburgh & West Virginia, an 89-mile road, has petitioned the Commission for the right to purchase the Western Maryland, which operates 804 miles; also the Wheeling & Lake Erie with 511 miles of line. Both these roads are already controlled by the big systems. Here is an interesting case where a little road which is reported not to be for sale at any reasonable "commercial value" is asking the Commission to force the Baltimore & Ohio and other railroad companies, to sell to it stocks owned by them.

In the final allocation of roads in the trunk line territory, the principles connected with these problems will be worked out and the precedents created will unquestionably be followed thereafter in other sections.

What Is "Commercial Value"?

While this matter is being thrashed out before the Commission, the big systems will undoubtedly acquire by negotiations rather than by arbitration a number of short lines, thus gradually simplifying the situation. Nevertheless, some values are bound to come up for arbitration and it will be very interesting to note on what theory the "commercial value" will be determined.

This term "commercial value" is an unusual one because anything for which there is but one buyer can hardly have a commercial value. The value of each line must necessarily be a composite between its present earning capacity, to a certain extent adjusted to physical values, and a credit or debit for future earning probabilities, with credit and debit for reduction in the cost of operation by the larger systems due to the elimination of the overhead of the smaller lines, which saving may be counterbalanced by necessary increase in wages and better service.

The question will also arise as to the amount of money necessary to be expended on these weak lines for the purpose of betterments which may be necessary for reduction in operating expenses and for public convenience, and which may be non-remunerative, such as the elimination of grade crossings. In many cases the saving in operating expenses will be substantial, in which event the question arises as to whether the owners of the short lines are entitled to a share of these prospective savings or whether the purchaser is entitled to the full benefits. Some of the commissioners believe that the public should be entitled to these benefits but inasmuch as the railroads as a whole never have earned their standard return, the question of giving the public the benefit of these savings seems to be largely theoretical.

What About the Electric Lines?

One important problem in connection with the absorption of the short lines is not adjudicated in the New York Central decision. This refers to the electric lines all over the country which are trying to make up for the loss in passenger business by more aggressively soliciting freight traffic. Their freight business in many, if not in most cases, is rapidly growing in importance.

Two electric lines were involved in the New York Central Case. One was the Southern New York, a 62-mile road in Central New York, in which case the Commission held that it was not tributary to the New York Central because it only exchanged a very small amount of its freight traffic with that road, but exchanged a very much larger amount with the New York, Ontario & Western and the Delaware & Hudson. The deduction might be drawn that this road would be allocated to the N. Y. O. & W., controlled by the New York, New Haven & Hartford, but one could by no means be certain of that.

The second is the peculiar case of the Fonda, Johnstown & Gloversville, which operates both a steam and electric line to the important manufacturing communities of Johnstown and Gloversville and adjacent territory. This company built the electric division nearly 30 years ago in order to avoid having its terrintory invaded by someone else. Controlling both steam and electric lines, it has handled all its freight business over the steam division. The I. C. C. has ordered the New York Central to acquire the steam division of the F. J. & G. After this is done the management of the F. J. & G. will undoubtedly endeavor to get all the freight business possible for the remaining electric division and could probably be successful in this direction because its securities are largely held locally. The curious situation might arise that the New York Central, after having been requested by the Commission to acquire the steam division, would find that a rival electric division was getting most of the business and then, at some time subsequent, it might be required to buy the electric division because the latter would depend upon it for its connection. There are many electric lines throughout the country doing a heavy freight business but in very few cases do they serve communities which are exclusively dependent upon them. Nevertheless, important industries have grown up along these lines and in order to maintain their routes and competitive conditions, it may be held that these electric lines should also be allocated to the strong railroad systems..

Most emphatically, railroad consolidation has made huge progress and it now looks as though additional legislation for this purpose might be unnecessary.

Wall Street still seems to believe that the Consolidation Act was passed largely for its benefit and loses sight of the fact that while 2 and 2 may work out 12 or 24 in industrial combinations, it never will add up to more than 4 in a railroad combination!

WINTER SPORTS AT DARTMOUTH COLLEGE, Hanover, N. H., on February 8, 9 and 10, called together a large number of visitors to that town necessitating special trains over the Boston & Maine from Boston and Springfield. Officers of the road estimated that the occasion furnished the road with about 1000 extra passengers, including large numbers of "envied college girls" from Smith, Vassar and other educational institutions.

Problems Concerning Locomotive Fuel*

The characteristics of good locomotive fuel—Ultimate use of pulverized coal anticipated

By W. L. Robinson

Superintendent Fuel and Locomotive Performance,
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FUEL is by far the most expensive single material purchased and used by the railroads. Fuel expense stands second only to wage expense in railroad operation.

The importance of the item of fuel expense in railroad operation and the abundance of high rank bituminous coal widely distributed and produced at relatively low cost, explains in part, at least, the fact that the railroads endeavor to secure good quality high rank coal which they consume as fuel in the raw state. The main consideration is the necessity, imposed by the restrictions under which they operate, of producing the maximum amount of transportation for the minimum fuel expense. It is therefore reasonable to anticipate that the railroads favorably situated to do so will be among the first power producers to take advantage of the opportunity to use processed fuel of suitable characteristics when this industry has demonstrated that a regular supply in adequate quantity is available at a cost which will permit the cheaper production of foot-pounds at the locomotive drawbar.

Under present average conditions it requires about one-half a ton of coal to start a freight train and bring it up to running speed after a stop has been made, so that elimination of stops and delays in the movement of trains is one of the important factors in the reduction of fuel expense. Every railroad operating officer can recall from his experience occasions when all other considerations have had to be subordinated to getting the trains over the road.

From the angle of operating feasibility the condition of the fire is the principal limiting factor and the extension of the practice, with the elimination of intermediate terminal attention, less grate shaking on the run, less dumping of ash pans and fire cleaning, freedom from dirty flues, slagging of heating surfaces and related difficulties, depends to a quite material extent upon the provision of clean coal without an excessive proportion of fine sizes.

Combustion in the Locomotive Firebox

Limited space—particularly as to height and width—is the principal difficulty with which steam locomotive designers are confronted in their endeavor to improve locomotive fuel economy.

Limited grate area makes necessary extremely high rates of combustion in order to develop the capacity required to realize maximum efficiency in the locomotive as a transportation machine unit and the strong draft which must be used to support the high combustion rate combined with the unavoidable restriction of firebox volume makes impossible the provision of ideal combustion conditions such as may be obtained in stationary steam plant practice where no space limit is imposed.

The average distribution of the heat in the coal fired to a locomotive of conventional design, representative of the greater proportion of the locomotives now in service, assuming that the locomotive is in perfect mechanical condition and skillfully fired and operated, has been stated by competent authority to be approximately as follows:

	Per cent
Loss to ashpan	4
Loss by radiation	5
Loss to heat in burned gases	14
Loss to unburned gases	4
Loss to cinders	8
Loss to locomotive friction	1
Heat in exhaust steam	52
Total lost and rejected	88
Used by steam auxiliaries	6
Applied as work at drawbar	6
Total	100

It will be observed that more than 75 per cent of the heat of the coal is rejected at the stack. In recently designed locomotives commendable results have been obtained in the reduction of this loss by the more efficient transfer of heat to the steam, more efficient use of the steam in the cylinders and recovery of heat from the exhaust steam to heat the boiler feed water.

Grade or Size of Locomotive Coal

The draft intensity of locomotives is extremely high as compared with that of stationary steam plants. The maximum draft at the stack may be 10 in. of water or more, with an average of 4 to 6 in., which will correspond to around 1½ in. in the firebox. Such high draft carries out as unconsumed carbon on the average of six or eight per cent of the fuel value of the coal fired and a small increase above the critical percentage of fine sizes or slack in the coal as fired, will result in a very large increase in the percentage of stack loss.

Road tests of stoker-fired locomotives based upon entire trips involving low as well as high rates of combustion have shown, on the basis of equivalent evaporation, an increase of 20 per cent in consumption of 2-in. screenings as compared with run of mine and an increase of 25 per cent in consumption of ¾-in. screenings as compared with the 2-in. screenings. This illustrates very clearly the vital importance of limiting the content of fine sizes and slack in the coal as fired.

Some variation in the proportions of the different sizes, the maximum and minimum sizes and the resultant average size of the coal as fired is required, to assure maximum economy in utilization in each of such widely varying kinds of locomotive service as hand-fired switching locomotives, accommodation passenger trains,

* From a paper presented before the second International Conference on Bituminous Coal, held at Pittsburgh, during November, 1928.

through heavy passenger trains and stoker-fired heavy freight and passenger trains. In general, it appears to be the consensus of informed opinion that the single grade best adaptable to such variations in service requirements is the run of mine coal without lumps in excess of 6 in. maximum dimension and with not more than 25 per cent content of ¼-in. screenings.

Ash Content of Locomotive Coal

The non-combustible content of locomotive coal plays a very important part in the fuel performance. The moisture is so much inert matter purchased at the same price as combustible and requiring about .1 per cent of the heat content of an average coal to raise each one per cent of moisture to stack temperature. Of much greater significance than moisture is the ash content, because of its possible effect upon the rate and efficiency of combustion. Non-clinkering ash is not troublesome and only represents so much inert matter. Ash which clinkers under the conditions of combustion in the locomotive firebox, obstructing the air supply through the grates and possibly causing damage to the grates through overheating, may result in any degree of trouble from merely inefficient combustion to complete steam failure.

Slagging of heating surfaces in the conventional locomotive firebox is closely related to the slack and ash content of the coal and the character of the ash. The intense draft carries a considerable percentage of ash and fine sized cinder to the flue sheet through the high-temperature zone of the firebox. If the ash becomes plastic at the temperature experienced, part of it sticks to the sheet and builds up accumulation of so-called honeycomb which in extreme cases blocks the flues.

The results experienced from early attempts to use pulverized coal obtained from miscellaneous sources, in the conventional locomotive firebox, were discouraging largely because of excessive slagging of the flues, and clearly demonstrated one of the serious difficulties that may be expected from too high a proportion of fine sizes in coal fired on locomotive grates, if the ash has a low fusing temperature.

The mechanical stoker, required to develop the capacity of locomotives of more than 50,000 lb. tractive force, crushes the coal to a size not exceeding two to three inches maximum dimension. This crushing as the coal is delivered to the firebox increases to some extent the proportion of the very fine sizes, and the resultant increase in cinder stack loss has become a serious problem in heavy through passenger service on some roads. Improvement of this condition is anticipated through the effective coöperation extended by the stoker manufacturers in modifying their construction and in the provision of coal with a reduced proportion of fine sizes.

Preparation of Coal at the Mine

It is impossible to overemphasize the value to coal consumers of the best practicable degree of preparation of coal before shipment, to insure close correspondence between the quality of the coal as shipped and the prepared seam sample upon the basis of which the sale of the coal is usually made. It is a very common occurrence to find shipment samples showing a larger ash content than even the unprepared seam sample from the mine, owing to the failure properly to handle bad roof or floor conditions.

A difference of only one per cent between the ash content of prepared seam sample and shipment sample is of such ordinary occurrence as to attract only casual notice, but let us illustrate the importance of this variation to railroads alone, as coal consumers. One per cent is equivalent to 20 lb. per ton. Our railroads use in round numbers 125 million tons of coal per year. Twenty pounds of extraneous material in each ton of this annual consumption amounts to one million and a quarter tons which is loaded into 25 thousand 50-ton capacity coal cars would make up 213 trains each a mile long. This waste material is not only paid for at the average price of the fuel but is hauled to consumption points, loaded onto tenders where it imposes a further handicap upon combustion efficiency and fuel economy, and finally has to be hauled away from ash pits—a total loss from beginning to end.

Supervision for Locomotive Fuel Economy

After selection of the locomotive coal has been made, based upon consideration of the factors previously mentioned and possibly some others of a purely practical local application, economical utilization can only be secured by competent, comprehensive and continuous supervision over such details as those mentioned following:

a. The inspection of the coal at mines, in yards, at coaling stations and on locomotive tenders to insure that the standards of preparation are properly maintained by the producers.

b. The handling of the coal from cars to locomotive tenders to minimize the degradation and the separation of sizes.

c. The distribution of the coal from mines to specified coaling stations and disbursement to locomotives so that each coal will be used in the class of service in which it will produce the most satisfactory results.

d. The maintenance of good operative condition of the locomotives through reports to the shops and engine houses when repairs occasioned by even minor defects are required.

e. The education of the locomotive enginemen and firemen in the practical application of economical principles to the details of their handling of the locomotives in their charge.

f. The various factors involved in securing the interested coöperation of the personnel in all branches of the railroad organization and coördinating their efforts toward improvement in train loading, train dispatching and movement, the elimination of delays and the many other details which affect efficiency of performance.

g. The records and reports upon which distribution of fuel charges is based and by which the performance is determined and the compilation and distribution of adequate statistics for the prompt information of all concerned as to the trend of the current performance and the reasons therefor.

Improvement in Locomotive Design

The development and use of a gradually increasing proportion of locomotives of greater capacity and better design, has contributed to an important extent to the improvement in economical utilization of locomotive fuel during the past 15 or 20 years. While there are still in service many locomotives of the old types built 20 or 30 years ago, an increasingly large proportion of them are being rebuilt to an approximation of recent standards of design and equipped with proved economy producing appliances. Each year sees many of the obsolete type retired and replaced by new locomotives of modern design, with resultant beneficial effect upon the performance averages.

The future holds much of promise in the direction of further improvement in steam locomotive design. Boilers of new design, probably of the water-tube type, with ample grate area and greater firebox volume, promise better evaporation rates, possibilities of much higher steam pressures and lower maintenance costs. Refinement in engine design and improvement in mechanical construction and provision for lubrication will be accompanied by better steam rates, increased stability in the adjustment of parts subject to stress and wear and lower maintenance costs.

Standby Fuel Loss Heavy

The reduction of standby fuel loss in coal-fired locomotive service is a goal hopefully regarded by all railroad operating officers. This is one of the principal advantages derived from the use of oil as a locomotive fuel, and the equal flexibility offered by pulverized coal has encouraged engineering research which gives promise of eventual success in the application of this method through modification of firebox and boiler design and the provision of adequate volume and combustion space. It is estimated that approximately 15 per cent of the total locomotive fuel is consumed in cleaning, maintaining and preparing fires while the locomotives are in the engine terminals, in addition to which, are the standby losses on the road. This represents a quantity equivalent to 15 or 20 million tons of coal per year on our railroads. The saving of at least one-half the normal standby consumption on each locomotive equipped is conservatively to be anticipated from the successful utilization of pulverized coal, a possibility which it is considered fully justifies the extensive research devoted to the problem and the confidence of railroad officers in its final successful solution and general application. The importance of this consummation in the provision of another outlet for the utilization of the fine sizes of coal is not to be minimized by the coal operator and the industrial consumer of bituminous coal. Meantime, at some of the large new engine terminals, where the investment in the required facilities can be justified, there appears to be prospect that standby fuel saving, with the elimination of objectionable smoke, may result from the use of the process of direct steaming of coal burning locomotives by raising boiler pressure with steam supplied from the stationary boiler plant.

A Plea for Modernizing of Our Railways *

By C. A. Morse

Retired Chief Engineer, Chicago, Rock Island & Pacific, Chicago

RAILROAD location was, until the early eighties, to a great extent an individual accomplishment. In constructing a railroad in a new country, where maps were crude and published contour maps were unknown, it was the practice to go over a proposed line and pick out, largely by eye, a route for a survey, and after a preliminary profile had been secured, to decide on a maximum rate of grade and a maximum degree of curvature. A location survey was then made, and the line constructed on this survey, with possibly some improvement in alinement made by the construction engineer, as he had more opportunity to study the alinement as the work was progressing. In those days land had little value, so that the consideration of right-of-way did not enter into the question of changes in alinement.

About 1881, A. M. Wellington published the first edition of his "Economics of Railway Location", which was the first attempt to place values on curvature, rise and fall and distance and to compare the economic values of different ruling grades. The need of such data was so great that this book at once came into general use and it awakened general interest in the economics of railway location. Wellington developed his studies and, in 1887, published a larger volume on the subject. In 1906, Walter Loring Webb, assistant professor of engineering, in charge of railroad engineering at the University of Pennsylvania, published a book on the same subject. This was followed later by a similar book by William G. Raymond, professor of engineering, and dean of the College of Applied Science at the University of Iowa.

I made the acquaintance of Dean Raymond, when in 1924, I wrote him to see where I could get a copy of the latest edition of his book on the "Elements of Railroad Engineering" and in response he sent me a copy with his compliments. In acknowledging it, I told him of a problem that I then had in hand, in connection with a study that I was making for the Rock Island, of the economics of the location of a possible new line between Trenton, Mo., and Kansas City. The dean became interested and asked for the data, stating that he would like to make a study of it personally. I furnished him with maps and profiles of two lines that had been surveyed, and a statement of the traffic between these points during 1924.

The two lines under investigation were; (1), A line with a 0.50 per cent ruling grade and a maximum of 1 deg. 30 min. curves, that had been surveyed in 1905, at which time the business between these points was not sufficient to warrant the construction of a line with less than a 0.50 maximum grade; (2), A survey made in 1924 for a line with a 0.30 per cent ruling grade and maximum curvature of 1 deg. The problem was to determine whether the business of 1924 was sufficient to warrant the additional cost of the 0.30 per cent line, and to make a comparison of the economics of the two lines to see how much more we were warranted in spending for a 0.30 per cent grade line, than for the 0.50 per cent grade line, based on the 1924 business.

The dean and some of his assistants worked the problem out, and he reported to me that we were warranted in spending about four million dollars more to get the 0.30 per cent line than we were for the 0.50 per cent line. I had completed my figures when I received his report and they showed that we were warranted in spending $3,853,639 more for the 0.30 per cent maximum grade line than we were for the 0.50 per cent line, while the estimated additional cost of the 0.30 per cent line was only $2,865,777. In other words we were able to get the 0.30 per cent grade for about one million dollars less than the economic study of the problem showed that we were warranted in spending.

This study was based on the business of 1924 and the line has not yet been constructed. It will take two years to build it and if it were started in 1929 and completed in 1930, the business of 1931 should be compared with 1924. During these seven years the business will probably increase an average of 5 per cent per year, so that there should be about a 35 per cent

* From an address before the engineering students of the University of Iowa at Iowa City on January 10.

increase in business handled, in 1931 as compared with 1924, which should increase the saving by 35 per cent over what we would have been warranted in spending in 1924. This saving will continue to increase as business increases in the future.

This is a fair example of what the railroads are having to do or should do to modernize their plants to meet modern developments brought to the front by the developments of science and economics. They must develop their properties along scientific lines as other transportation facilities are doing and it is to the interest of the stockholders and the public that they should do this.

While many railways have done much to modernize their properties in recent years, this trend has not been as marked as in some other industries. One reason for their failure is the fact that under the present organization of most railroads the chief engineer and the superintendent of motive power are not free to study and develop plans for these improvements except through the operating organization whose attention is, of necessity, concentrated on the problems of operating the existing property rather than of developing new facilities along more scientific lines.

While a road was in the process of construction it was entirely in the hands of the chief engineer. He located and constructed the line, the stations, terminals and all other facilities. When construction was completed, the line was turned over to the operating organization and the chief engineer was considered as having completed his work. He usually went with some other project, or was engaged in the construction of other extensions and branch lines.

The question of economical operation did not arise in those days, as the railroads made their own tariffs and charged whatever they chose for their services. Later, when state and federal supervision developed, and reports were necessary on physical elements, an engineering organization was created to collect the data for these reports and was attached to the operating department. On many railroads the head of this sub-department was given the title of engineer. Later this engineering department was used to construct extensions and terminal yards and as it developed, the title of chief engineer was given to the head of the department.

A similar development occured in the mechanical department, the man at the head of the department being given the title of superintendent of motive power. As power increased in size and the locomotives became more complicated a mechanical engineer was added to his force; with the advent of electrical appliances an electrical engineer was added, then came an engineer of car construction, etc.

In this way both the civil engineering department and the mechanical engineering department have been developing during the last 50 years. They started as sub-departments of the operating department and little change has been made in all these years, until today the scientific organization on the majority of our railroads is under a department which usually knows little about the scientific necessities of the railroad, but which, owing to its position, must make decisions that may be anything but scientific. Fortunately for the railroads, there are many men at the head of the operating departments who are sufficiently broad gage to defer to the recommendations of their chief engineer or superintendent of motive power and carry them out.

The engineer has been coming into his own in the development of our country during the last 12 or 15 years, but he has not been used to the extent that his training and experience warrants in the development of the steam railroads with the result that the economies that are possible from such development have not yet been realized to the maximum.

Portable Flasher Operates on Dry Cells

A PORTABLE red flash lamp, which can be used to replace the oil lamp commonly used by trainmen, and also for many other railway applications, such as an obstruction light on construction projects, and as a temporary highway crossing warning, has been placed on the market by the National Carbon Company, Inc., under the trade name of Ever-Ready Portable Flasher. Because of the intermittent flashing signal of the portable unit, it is effective as a warning signal. Although the initial cost of the portable flasher is considerably more than that of a kerosense lantern, its maintenance cost is said to be less and in the long run it is claimed to be a more economical warning signal. One set of four Columbia dry cells will keep the flasher in continuous operation three months.

The Portable Red Flasher Is Held by a Freight Brakeman in the Same Manner as the Ordinary Kerosene Lantern

Current Furnished by Dry Cells

The flasher requires four standard Columbia six-inch dry cells connected in series to secure the six volts needed for the Ever-Ready Mazda lamp employed. Space is provided in the battery housing to carry an extra lamp. The battery compartment is constructed of seamless steel and is attractively finished in red. A heavy cylindrical red lens of the Fresnel type is mounted in the top of the flasher, which is cadmium plated for weather protection. The battery compartment is provided with a padlock and an extra long hasp so that the device can be secured to a chain to prevent theft. The flasher is of rugged construction throughout and is entirely weatherproof. The height is 16 in. overall, the diameter of the base, 7 in., and the weight, including the 4 dry cells, 16½ lbs.

Delaware, Lackawanna & Western

New locomotives and scrapping of old power improve performance—Heavy capital expenditures reduce costs

THE Delaware, Lackawanna & Western in the first eleven months of 1928 showed a performance of 10,821,781,000 gross ton-miles, which total is but 2.8 per cent greater than the performance during the same period of 1925. These periods, showing approximately the same gross movement, may be fairly compared from a standpoint of operating efficiency, and some of these comparisons are shown in Table 1.

It will be noted that, with a 4 per cent increase in car-miles, comparing the 1928 period with that of 1925, train-miles showed a decrease of the same percentage, while both locomotive-miles and freight train-hours declined more than 8 per cent.

Table I—Comparison of Selected Freight Operating Statistics

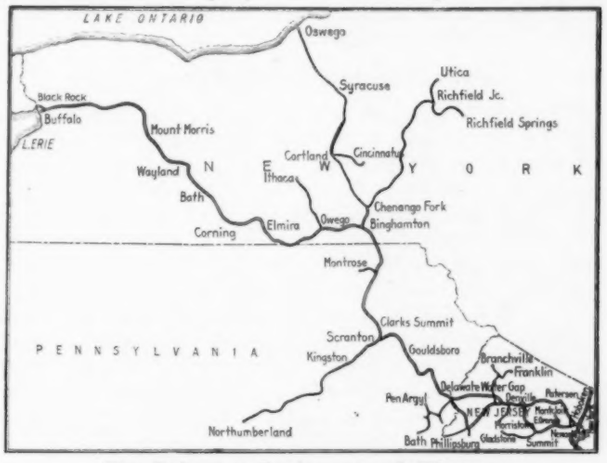
	Eleven Months 1928	Eleven Months 1925	Per cent of change Inc.	Per cent of change Dec.
Mileage operated	998	993	0.5	
Gross ton-miles (thousands)	10,821,781	10,528,763	2.8	
Net ton-miles (thousands)	4,544,007	4,639,983		2.1
Freight train-miles (thousands)	5,898	6,141		4.0
Freight locomotive-miles (thousands)	7,409	8,136		8.9
Freight car-miles (thousands)	285,037	273,921	4.1	
Freight train-hours	472,591	514,261		8.1
Car-miles per day	34.3	32.5	5.5	
Net ton-miles per car day	546	551		0.9
Per cent loaded to total car-miles	67.7	69.8		3.0
Net ton-miles per car day	546	551		0.9
Freight cars per train	49.3	45.6	8.1	
Gross tons per train	1835	1715	7.0	
Net tons per train	770	756	1.9	
Train speed, miles per train hour	12.5	11.9	5.0	
Gross ton-miles per train-hour	22,899	20,474	11.8	
Net ton-miles per train-hour	9,615	9,023	6.6	
Lb. coal per 1,000 gross ton-miles	136	162		16.1
Loco. miles per loco. day	73.1	68.7	6.4	
Per cent freight locos. unserviceable	18.5	16.9	9.5	
Percent freight cars unserviceable	4.3	3.5	22.9	

The number of freight cars per train and the gross tons per train were increased, as was average train speed, more than sufficiently to counteract a declining tendency in the average load per car; the result being a gain of 11.8 per cent in gross ton-miles per train-hour and of 6.6 per cent in net ton-miles per train-hour.

Locomotives an Important Factor

While many factors undoubtedly aided this greatly improved performance the most obvious of them is disclosed in the statements of freight motive power owned and total tractive effort. At the end of December, 1925, the Lackawanna had 431 freight locomotives of an aggregate tractive effort of 18,626,944 lb. At the end of December, 1928, freight locomotives totaled 330 with an aggregate tractive effort of 16,793,875—a reduction of 23 per cent in the number of freight locomotives and 9.8 per cent in total tractive power. Average tractive power per freight locomotive increased from 43,217 lb. in 1925 to 50,891 in 1928, or 17.8 per cent.

This retirement of old power, with only partial replacement necessary by reason of the greater size and efficiency of the newer locomotives, contributed greatly to the improved train speed and improved train loading. It undoubtedly aided materially in the increase in locomotive miles per locomotive day.



The Delaware, Lackawanna & Western

The Lackawanna has to operate a considerable helper mileage in its freight service over the Pocono mountains. During the eleven-month period of 1925 its ratio of freight locomotive-miles to freight train-miles was 1.32 which in the similar period of 1928 had been reduced to 1.26, in which reduction the newer power undoubtedly figured largely.

In 1927 the Lackawanna's tonnage was divided as follows: Products of agriculture, 8.2 per cent; products of animals, 2.5 per cent; products of mines, 55.7 per cent (anthracite 36.4 per cent); products of forests, 3 per cent; manufactures and miscellaneous 26.8 per cent; and l.c.l., 3.8 per cent. At one time primarily a carrier of anthracite coal, the Lackawanna has each year built up its tonnage of other traffic to give the wide diversification which it has now attained.

Table II—Delaware, Lackawanna & Western. Operating Results, Selected Items, 1916 to 1928

Year	Revenue Ton Miles (Thousands)	Revenue Passenger Miles (Thousands)	Rev. per Ton Mile Cents	Anthr. Coal Revenues	Mdse Freight Revenues	Passenger Revenues	Total Revenues	Total Operating Expenses	Net Operating Revenues	Net After Taxes	Net Ry. Operating Income
1916	$5,263,263	$548,805	0.72	$14,475,244	$23,229,865	$8,674,863	$51,580,899	$31,940,974	$19,639,925	$17,114,593	.....
1917	5,591,043	585,179	0.75	17,130,291	24,637,415	9,289,838	57,211,224	37,676,488	19,534,736	16,810,495	$16,971,381
1918	5,574,774	604,648	0.90	19,009,846	31,287,554	11,204,813	68,740,076	49,925,685	18,814,392	15,853,906	16,011,656
1919	4,830,066	643,254	1.07	19,055,523	32,839,878	12,380,787	71,824,047	56,065,251	15,758,796	12,287,412	11,947,364
1920	5,166,315	698,359	1.17	20,228,484	40,132,599	13,868,517	83,340,062	73,898,430	9,441,632	6,079,655	6,104,886
1921	4,454,206	656,098	1.43	26,606,299	36,970,445	14,438,161	85,977,815	67,872,058	18,105,757	12,781,395	12,997,084
1922	3,851,276	652,062	1.34	14,294,191	37,262,516	13,960,681	74,622,344	63,671,647	10,950,697	6,046,287	6,669,022
1923	4,852,526	667,290	1.32	25,151,010	39,085,364	14,185,914	88,236,974	69,467,853	18,769,120	12,751,170	13,442,543
1924	4,809,172	660,826	1.32	23,576,425	39,874,878	13,600,454	86,727,184	64,485,909	22,241,275	15,328,663	15,925,962
1925	4,587,677	670,930	1.30	17,757,554	42,091,064	13,628,673	83,659,738	62,390,610	21,244,447	14,402,022	14,892,121
1926	4,964,588	666,555	1.31	22,711,502	42,456,050	13,338,081	88,804,745	62,377,489	26,427,256	18,746,352	19,331,910
1927	4,647,082	661,430	1.33	20,519,782	41,156,600	13,006,932	84,685,830	60,183,060	24,502,770	17,033,435	17,398,099
1928	.....	.....	.....	.....	.....	.....	81,138,442	57,986,008	23,152,434	.....	17,110,545

Standard return for operations during federal control was $15,749,477.

Selected items showing the Lackawanna's operating results during the past twelve years (only partially complete for 1928) are shown in Table II. It will be noted that total revenues for 1928 were less than in either 1926 or 1927. On the other hand, however, business has been improving during the past few months and earnings during the last three months of 1928 exceeded those of the same months of 1927, auguring well for at least the early part of 1929.

The Lackawanna in 1928 had a net income equivalent to approximately $7.50 a share on the outstanding capital stock ($50 par) on which the regular dividend rate is 12 per cent, or $6 per share, with an extra dividend of 2 per cent the rule in recent years. At the end of 1927 the company had a corporate surplus of $78,742,613 compared with outstanding capital stock of $84,511,820. Funded debt is negligible, but its equivalent exists in the form of rent for leased roads which totaled $6,962,236 in 1927.

Heavy Investment Per Mile of Line

The company stands well up among the leaders in the additional investment in road and equipment per mile of line in the years since the war. In fact, the additional expenditure per mile of line in 1921-27 averaged about $55,000. During 1927 and 1928, among other important improvements, the road added eight miles of third and eight miles of fourth main track on its Boonton line (the main line for freight traffic into New York); it completed very heavy grading to provide for third and fourth track construction through Paterson, N. J.; it completed a new high-level, three-track bridge over the Hackensack river, eliminating draw bridge delays to its suburban trains. These are typical of capital improvements which are constantly being made to reduce operating expenses, speed up trains and improve service to patrons. Earnings, moreover, have increased sufficiently following these improvements to bring in a satisfactory rate of return on the additional investment.

The railroad is virtually without highway grade crossings in the congested area near New York. The fourth main track mileage has increased from year to year so that the road now has a minimum of four tracks from New York west to the Delaware river (with the exception of a few short stretches), as well as a substantial mileage of third and fourth tracks elsewhere on the system. The entire main line mileage is equipped with automatic signals, and has been for many years. Its freight traffic density per mile of line—13,978 net ton-miles per mile of road per day in 1927—is exceeded by but few comparable roads in the Eastern district, except the important soft coal carriers.

Projects for improved service to patrons now definitely authorized include electrification in the New York suburban area and the construction of a large modern freight terminal in Hoboken and Jersey City to expedite and facilitate the handling of New York freight traffic.

The road's maintenance of way ratio to operating revenues was 9.6 per cent in 1927 and the highest it has reached since 1922 was 10 per cent in 1925. This favorable figure has been obtained by high maintenance standards over a long term of years and adequate capital expenditures for track to secure an efficiently maintained structure. Creosoted ties, screw spikes, tie plates, rock ballast and rail of a heavy section have been standard for many years.

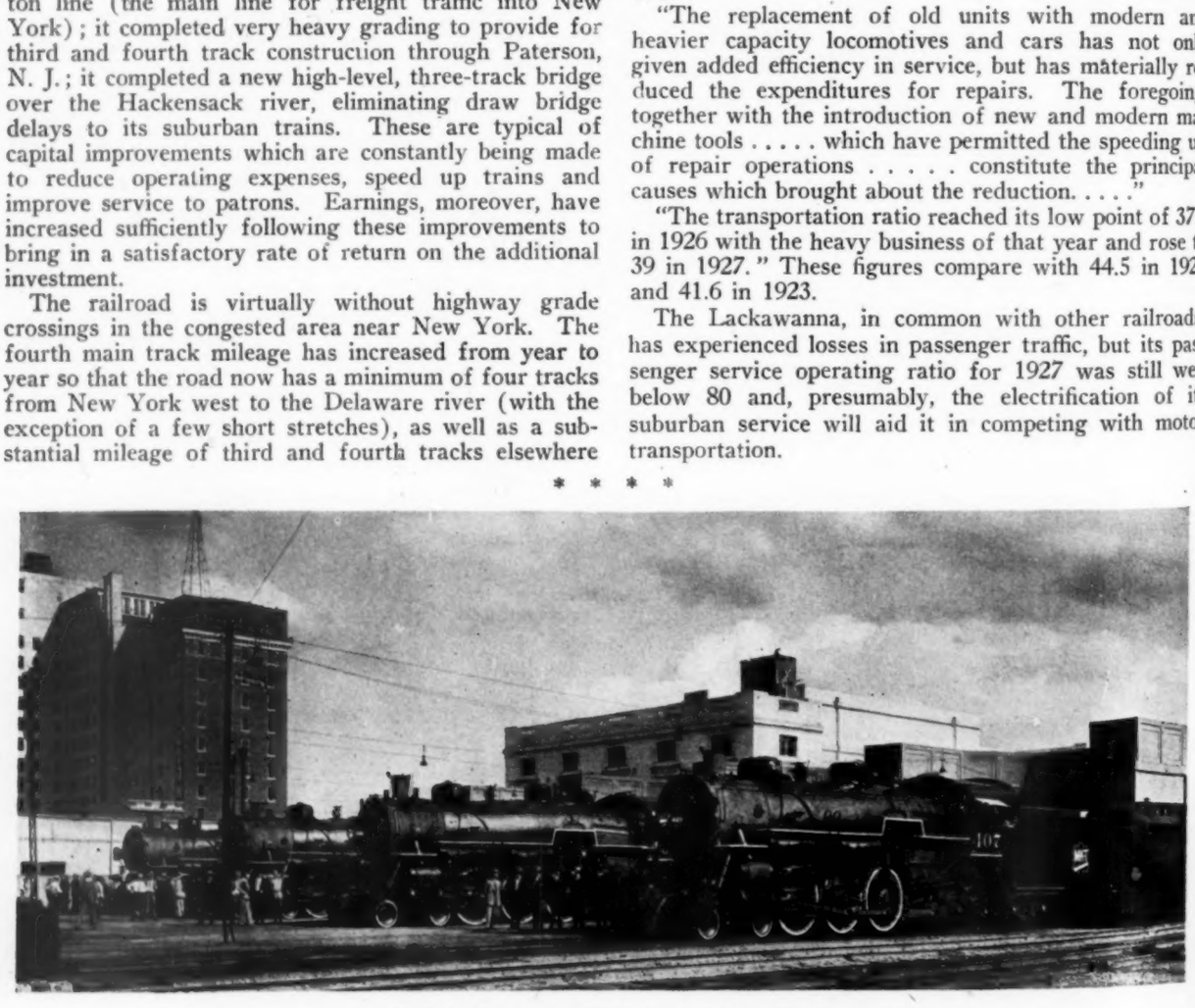
The maintenance of equipment ratio has steadily declined from 25 per cent in 1922 to 17.3 per cent in 1927. This decline has not come from a lowering of standards but rather from a scrapping of old equipment and the provision of new tools and facilities for more efficient maintenance. Says the company's annual report for 1927:

"The replacement of old units with modern and heavier capacity locomotives and cars has not only given added efficiency in service, but has materially reduced the expenditures for repairs. The foregoing, together with the introduction of new and modern machine tools . . . . . which have permitted the speeding up of repair operations . . . . . constitute the principal causes which brought about the reduction. . . . ."

"The transportation ratio reached its low point of 37.3 in 1926 with the heavy business of that year and rose to 39 in 1927." These figures compare with 44.5 in 1922 and 41.6 in 1923.

The Lackawanna, in common with other railroads, has experienced losses in passenger traffic, but its passenger service operating ratio for 1927 was still well below 80 and, presumably, the electrification of its suburban service will aid it in competing with motor transportation.

* * * *



M.K.T. Excursion Specials at Dallas, Texas

Hearing on Container Service

Washington sessions concluded on February 9 with resumption scheduled for March 18 in Dallas, Texas—New container plan outlined

WASHINGTON, D. C.

THE Washington hearing in connection with the Interstate Commerce Commission's investigation of container-car service, before Commissioner Porter and Attorney-Examiner Harry C. Ames, was concluded on February 9 and it was announced that the next hearing would be held at Dallas, Tex., on March 18, to be followed by further hearings probably at Kansas City on March 28 and at New York City on April 4. Examiner Ames made a direct request that the railroads operating container service conduct a thorough cost-study test for thirty days to show the cost of such service as compared with that of the regular merchandise service, and be prepared to submit evidence of the results at the New York hearing.

At the Dallas hearing, he said, the Missouri Pacific would be expected to submit evidence in support of its suspended container tariff and the protesting roads their evidence in opposition, while shippers would be given an opportunity to present testimony either for or against it at the Dallas hearing but more particularly at the Kansas City hearing. R. C. Fyfe, chairman of the Western Classification Committee, asked if, in view of the contention that the container rates will reduce the carload rates on certain classes of freight, it would not be well to include in the study also the cost of handling consolidated carloads of freight handled at third class as compared with the same merchandise on container cars. E. J. White, vice-president and general solicitor of the Missouri Pacific, said that the protesting roads have their own data regarding consolidated cars and Mr. Ames said that question would be left to the roads. The evidence presented indicates, he said, that the revenue from container traffic is somewhat less than the amount of the regular rates for l.c.l. merchandise service and that there is also a strong presumption that the cost of operation of container service is less than that for l.c.l. freight, because it saves billing and station and platform service, etc. However, these facts do not prove whether the net revenue is greater than that of the merchandise service, although every carrier witness had made the free assertion that it is greater.

The hearings opened on February 6 with the New York Central offering the initial evidence through the testimony of its assistant freight traffic manager, G. C. Woodruff. This opening testimony of Mr. Woodruff was reported in the *Railway Age* of February 9. In it he sketched the development of container service on the New York Central from the time of its inauguration between Cleveland, Ohio, and Chicago in March 1921, up to December, 1927, when proposed extensions into New England and Central Freight Association territory brought forth protests from other trunk lines.

Attitude of Railway Patrons

Following this survey of developments in the service, Mr. Woodruff directed his testimony at the attitude of railway patrons toward the use of containers and in this connection stated that the shipping device was now employed by 150 firms whose products varied widely. Every firm, he added, which ever commenced to use the container has continued to do so, save one which went out of business.

Questioned as to the function of the consolidator and freight forwarder in container operations Mr. Woodruff held that these functionaries were a natural growth and development in the case. He added that consolidation shipments relieve the railways of a considerable expense and at this point filed an exhibit, designed to show the amount of container traffic handled through the Universal Carloading & Distributing Company and that forwarded by individuals.

A second exhibit contained a series of photographs, designed to picture new developments in container manufacture and handling. These developments permit the handling of containers without the use of overhead cranes. A new car has been designed with drop sides to permit a shifting of the containers onto platforms for handling by lift trucks. These features, it was stated will permit the extension of the services to places where the erection of a crane would not be justified.

Still another exhibit set forth actual shipments in New York Central box cars and in testimony it was pointed out that had the same shipments been handled in containers a much higher per car revenue would have resulted.

Revenues Compared

Revenues per car on regular shipments and on container shipments between several New York Central points were also read into the record. It was here stated that the l. c. l. revenue per car-mile is about 21 cents whereas the revenue per six-container-mile (cars are designed to handle six merchandise containers) is from 30 to 48 cents. While the mileage rate of five cents gives the 30 cents, the application of the minimum of $8.25 per loaded container on short distances brings the higher mileage rates and thus explains the spread between 30 and 48 cents.

The testimony was next directed to the brick traffic from Hudson river points which is handled in the bulk containers and which it was stated formerly moved by water. The rates on this brick, as well as those on stone and lime, similarly handled were set forth in an exhibit. It was developed that the brick rates produced a ton mile revenue of approximately two cents.

At the close of Mr. Woodruff's direct testimony, counsel for the New York Central stated that his road by reason of an agreement with the estate of the late A. H. Smith, former president of the road, later renewed with the L. C. L. Corporation, had the right to build and operate containers on its own lines. Counsel agreed to determine whether or not a formal contract was in existence and inform the examiner.

Counsel for several protesting western trunk lines sought, at the outset of the cross-examination, to inquire into the arrangements between the New York Central and the owners of the container patents but was checked

by the objection of New York Central counsel who suggested that Mr. Woodruff would be available if anyone desired to call him later in these matters.

It was then brought out in cross-examination that 75 per cent. of container shipments are handled through consolidators. Questioned by a representative of southwestern shippers as to the empty movement of containers, Mr. Woodruff stated that this was a question of operating policy. He explained that odd containers over full car loads could be held and thus make favorable figures or could be forwarded in partly loaded cars to give service to shippers.

Questioned by W. H. Chandler of the Merchants' Association of New York as to loss and damage claims on container traffic, the witness stated that during the seven years since its inauguration less than $1,000 has been paid. Toward the close of the afternoon session the cross-examination was taken up by Examiner Ames.

N. Y. C. Not Equipped to Handle Pennsylvania Containers

Examiner Ames' questioning of the witness extended into the opening session of February 7 when he inquired into the attitude of the New York Central with reference to the acceptance for movement or in interchange, of containers other than those manufactured under the patents of the L.C.L. Corporation. The examiner mentioned specifically the containers in service on the Pennsylvania whereupon Mr. Woodruff stated that the New York Central is not equipped to handle the Pennsylvania containers. Pressed further and asked if his road would accept in interchange a Pennsylvania container car, loaded with Pennsylvania containers, the witness replied in the negative. Counsel for the New York Central here brought out that there was no existing tariff under which such interchange could be made. The examiner continued along the same line and asked if the New York Central would accept a container offered by a private shipper but answering the description of the container mentioned in the tariff. The reply was that such a container would be accepted but would be billed at gross weight under the class rates.

This concluded the cross-examination of Mr. Woodruff and Walter Bockstahler, vice-president of the Universal Carloading & Distributing Company, who appeared at the request of Examiner Ames, took the stand. Mr. Bochstahler first described the organization of the Universal Carloading & Distributing Company and proceeded to outline the scope of its operations and services. The corporation, he said, was a wholly-owned subsidiary of the United States Freight Company and added that neither the parent company, the subsidiary, nor any affiliated corporations owned any stock in the L.C.L. Corporation.

Operations of Consolidator

The Universal, the witness stated, handles from 260 to 300 millions pounds of freight a month and during 1928 earned $500,000 as against earnings of $375,000 during 1927. The company operates in more than 50 cities throughout the country. In conducting these operations it secures stations in each of the selected cities and then holds itself out to cause certain commodities to be transported between designated points. It reserves for itself the right to select the transportation agency, the witness said, and thus does not limit its operations to rail movements. Mr. Bockstahler characterized his company as a functionary which performs services which the railway ordinarily would have to perform for its patrons, since its receiving and delivery stations supplant similar railway facilities.

The consolidated container operations of the Universal, he said, are identical with its consolidated box car operations, its rates are the same for both and the patron is not advised as to whether his goods move in containers or in box cars. Before the advent of the container, however, the Universal found it expedient to limit the freight which it would handle to commodities which move at the third class or lower rates. Now commodities of the upper classes are accepted and thus the container has permitted a material expansion in operations.

Store-door Delivery Given in Some Cities

The Universal grants its customers percentage reductions from the railway class rates, although in some cases the concession takes the form of additional services which are not available under railway rates. For example, storedoor delivery is given in some cities, mainly in the west, whereas truck movements to concentration points for farwarding by rail are made in some sections. In all cases, the witness stated, the railway rate is regarded as the maximum charge which will be made by his company.

In addition, the Universal pays loss and damage claims to its patrons but does not extend credit any longer than 15 days. The witness denied any discrimination between large and small shippers, stating that such a policy would be poor business. In this connection he added, the Universal serves 175,000 patrons, with 9,000 in New York and 14,000 in Chicago. The forwarding company owns no rolling stock, although it now has under lease 50 gondola cars, equipped to handle containers, and 300 containers. These were leased from the L.C.L. Corporation, the former on a monthly basis and the latter on a mileage basis. The witness explained that this equipment was procured as a factor of safety in protecting his company's service.

More Gross for Universal in Container Freight

Questioned as to earnings on the new freight which the advent of the container permitted his company to handle, Mr. Bockstahler stated that this was yielding a gross revenue of approximately four cents per 100 lb. in excess of the yield on the commodities handled in the box cars. The witness denied the existence of any contract between his company and the Missouri Pacific but added that representatives of several southwestern roads had conferred with him.

In cross-examination by counsel for the New York Central, Mr. Bockstahler stated that his company uses about 1,000 Pennsylvania containers a month for movements over the lines of that road. Containers and container cars, leased by the Universal from the L.C.L. Corporation, also move on the Pennsylvania, the witness added. He further said that there has never been a loss or damage claim on any shipment moved in an L.C.L. Corporation or a Pennsylvania container. General Solicitor E. H. Burgess of the Lehigh Valley also brought out that the Universal has had no loss or damage claims on Lehigh Valley freight moved in containers.

Little Diversion of Freight to Containers

Questioned by Examiner Ames as to whether the Universal had found it expedient in the matter of rates to use containers for freight formerly moved in box cars, Mr. Bockstahler replied that very little tonnage has been transferred from box cars to containers.

He added, however, that the container permits operation to points where there was formerly insufficient tonnage for the loading of cars.

Lehigh Valley Container Operations

With the close of Mr. Bockstahler's testimony, General Solicitor Burgess of the Lehigh Valley called A. C. McIntyre, general freight agent, as the first witness for that road. Mr. McIntyre stated that the container operations of the Lehigh were substantially the same as those of the New York Central. The service, he said, was inaugurated in January, 1928, with a container-mile rate of five cents for the first 4,000 lb. and one-fourth cent for each additional 500 lb. up to 7,000 lb. maximum.

It was next brought out that the Lehigh Valley provides the container cars but leases its containers from the L.C.L. Corporation at a rental of two cents per car-mile for a battery of six loaded containers and one cent per car-mile for a battery of six empties. If more than one of the six containers in a car are loaded, the car is considered as a loaded car. Mr. McIntyre stated that the empty movement was approximately 25 per cent and added that he regarded a certain traffic density necessary before the full economies of container operation could be realized. He considered the device still in the experimental stage and held that shippers are not yet educated to its benefits and use. In emphasizing the accounting economies attending container operation, the witness selected a movement which involved 27 containers in nine container cars. In this particular lot, he said, there were 3,517 packages and added that these, no doubt, represented some 300 separate shipments which would have to be waybilled separately under the regular l.c.l. rates.

Carload Operations as Economical as Container

In cross-examination, Mr. McIntyre stated it to be his opinion that there were no economies in container operations which were not present in carload operations and added that where the container rates cut under the carload rates the situation was unsatisfactory. Asked by Examiner Ames as to his reactions to a rate system, such as the container-mile, which disregards all previous rate making principles, Mr. McIntyre replied that while it might on first thought be regarded as a radical departure, he nevertheless considered the net revenue as the true index in the end. If, he said, the container rate produces more net then it is a desirable development.

The examiner next asked if it would not be possible to devise a small container to be moved in a box car with commodities bearing class rates. The answer was that some of the economies now present in the existing container operations would be lacking. The attention of the witness was then called to an item in one of his exhibits which indicated that for a designated movement of silk in containers, the gross revenue had been $49.56 whereas the same shipment in a box car at regular rates would have grossed $182.14. He stated, however, that because of the very great risk of pilferage, the Lehigh would prefer to take the $49.56 and have the silk in the theft-proof containers. He explained further that the selected movement was a short haul while long container hauls, with mounting mileage charges, tend to cut class rates less.

When he stated that approximately 85 per cent of container shipments over the Lehigh Valley are handled by the Universal Carloading & Distributing Company, Mr. McIntyre was asked by Examiner Ames why the railway could not do the consolidating itself. The witness admitted that such a system would be practicable but would not express an opinion as to its desirability.

Container to Compete With Motor Trucks

The Pennsylvania was the next to present evidence. This road, which operates its own type of container, stated that it had joined the carriers protesting the suspended tariffs because it was not satisfied with the present rate base for container shipments. It considered that a minimum container rate which would equal the third class rate would enable the railways to meet much of the present highway competition for freight traffic.

Following the testimony of the railroad witnesses Major Elihu Church outlined a plan which he described as a great improvement over the container-car plan, for the use of smaller steel containers, equipped with ball-bearing castors so that they could be moved anywhere without cranes or special equipment, to be loaded into ordinary box-cars and to be used for l.c.l. shipments at the usual rates for each commodity plus a special container charge. He offered to furnish such containers free to the railroads on a contractual basis, with provision for a division of profits above a fixed charge to the shipper for the use of the container, and to assume responsibility for the container and contents while off the line, making arrangements for trucking, etc., unless the shipper desired to make his own arrangements. All relations between the railroad and the shipper would be handled in the usual way but he said this plan would enable the railroads to give store-door delivery without extending their common-carrier liability to the city streets. "I am ready to start at once with any of them," he said.

Major Church said he thought the use of the present large containers, to be loaded onto special cars by cranes, offered little advantage to the shippers, so he had had some experimental containers made and had loaned them to several railroads for experiments, which he said had been successful. The containers are made of sheet steel, weigh about 370 lb., have dimensions such that they may be loaded in tiers in a box car, and have a capacity of about 90 cubic feet and up to 3,000 lb. weight, depending on the nature of the contents. They require no special equipment at stations, may be rolled into a car on a sheet of boiler plate for a ramp, and also to any part of the shipper's plant. From the standpoint of the shipper, he said, they afford perfect protection of the contents and, save the expense of packing and of much handling, while to the railroad they afford better use of cars at terminals, heavier loading and the saving in loss and damage claims, while doing away with much labor and handling. The railroads would publish tariffs providing for an additional charge to the shipper for the use of the container, which would be less than the amount of his saving, and would be enabled to maintain their rate structure and revenues while receiving a share of the profits at no additional investment.

Witness Criticises Big Container

In outlining what he conceived to be the objections to the big containers from the railway standpoint Major Church stated: That they require special rolling stock good for no other purpose; that they can only be moved economically when a full car of them is had all for one destination; that a haul of excessive extra dead weight per ton of freight is required; that a heavy investment in cranes or lift trucks is required; that

the present containers can operate only between certain places where cranes are located and, where cranes are stationary, extra switching costs are involved in the "spotting" of cars to place each individual container under the crane.

From the standpoint of the railway patrons, Major Church stated that he found the following objections: That the device is too large to be taken around easily in a factory or warehouse or stored; that it is inconvenient for loading onto motor trucks in that it requires a great deal of handling and thus wastes the time of the truck; that it does not fit in with the size of the ordinary shipment; that it cannot be handled by the average shipper's own trucks. In these latter connections the witness presented figures taken from an analysis of 40,000 l.c.l. shipments, which analysis, he said, revealed that the general average weight was 635 lb. and, if the shipments under 300 lb. be eliminated, the average becomes 1274 lb.

Turning to the conditions under which the big containers are used, Major Church stated that whereas, as he appraised the situation, the ideal is a shipper-to-consignee service, the development has been such that the big containers are mainly used by forwarding companies. This use, he contended, does not make for savings in handling, boxing or trucking to individual shippers but, he continued, is only workable because the forwarding company receives "what is in effect a subsidy out of the rate—for merely performing the service that the railroads can perform themselves equally well. A small part of this 'subsidy' is passed on to the shipper in lieu of any real economies." Major Church illustrated this point by comparing what the revenue for a designated movement would be under container tariffs with what class rate revenues would be for the same movement.

Sees Danger in Container-mile Rate

In discussing the container-mile rate, the witness said that no matter how high it be set it is none the less wrong in principle since it breaks down the traditional basis upon which charges are fixed. A container-mile rate, he added, however high, will only attract tonnage when it is less than existing class or commodity rates. The witness here conceded that the first railroads to introduce the container-mile rate would no doubt profit by it. He added, however, that this profit arises from tonnage diverted from other roads and, when these other lines introduce the same rates, the initial advantages to the pioneer roads will tend to disappear.

The logical outcome, he continued, of the container service as now operated, with a mileage rate basis is the establishment of a box car service on a similar rate basis. Such a situation, the witness held, would tend: To the destruction of l.c.l. rates as they now exist; to diminishing the use of railway station facilities because of the diversion of traffic to the consolidator; to a serious loss in railroad revenue; to discrimination between communities; and to the creation of a super-power in the consolidator who is subject to no I.C.C. restraint.

On cross-examination Major Church said that he proposed to arrange for pick-up and delivery service in various cities and to look after providing return loads for the containers. The railroad solicitors, he thought, would be glad to be able to offer the shippers the improved service and he would also co-operate in educating the shippers to the use of the container. He declined to give the exact cost of the container but said it would be under $100.

Looking Backward

Fifty Years Ago

On February 5 trains on the New Mexico extension of the Atchison, Topeka & Santa Fe began to run to Otero, N. M., 30 miles south of Trinidad, Colo. Otero is the first regular railroad station within the territory of New Mexico. The grading of the road toward Las Vegas, N. M., is being pushed as fast as possible.—*Railroad Gazette*, February 14, 1879.

Construction of the Pittsburgh & Lake Erie, extending from Pittsburgh, Pa., to Youngstown, Ohio, has been completed and the line was opened for freight traffic on February 10. Passenger trains will be put on soon. The new route, through a connection with the New York, Pennsylvania & Ohio [now the Erie] at Youngstown, is 24 miles shorter than the present routes to Cleveland from Pittsburgh.—*Railway Age*, February 14, 1879.

Twenty-Five Years Ago

W. J. Jenks, trainmaster of the the Fourth division of the Seaboard Air Line, has been appointed superintendent of the same division, with office at Jacksonville, Fla.—*Railway Age*, February 16.

The free pass problem, which is again before many state legislatures, is complicated in Iowa by the proposal that passes be abolished and in lieu thereof that passenger rates be reduced to 2 cents per mile. In other states bills have been introduced which would compel the railways to carry all office-holders free.—*Railway Age*, February 19, 1904.

The building for the transportation exhibits at St. Louis, Mo., which is the most expensive of any of the temporary structures in the World's Fair group, its cost being $700,000, has been completed and the installation of exhibits has commenced. The building has dimensions of 1,300 ft. by 562 ft. and contains 14 permanent tracks and a testing laboratory. The Baltimore & Ohio historical exhibit of old locomotives and cars is now being transferred from the Field Museum at Chicago.—*Railway Age*, February 19, 1904.

Control of the Central New England and its leased lines, connecting Campbell Hall, N. Y., with Springfield, Mass., and Hartford, Conn., a total of 198 miles, has been purchased by the New York, New Haven & Hartford. By acquiring control of this road, including the Poughkeepsie bridge across the Hudson river, the New Haven makes direct connections with roads with which it has had to exchange business under the disadvantages of a ferry at Fishkill, N. Y.—*Railway Age*, February 16, 1904.

Ten Years Ago

Conrad E. Spens, manager of inland traffic for the Food Administration, has been appointed assistant director of traffic of the Railroad Administration in charge of export and import traffic.—*Railway Review*, February 15, 1919.

Fourteen railroad labor organizations, claiming to represent nearly 1,900,000 employees, have endorsed the Plumb plan for government ownership of the railroads, A. B. Garretson, president of the Order of Railway Conductors, testified before the Senate Committee on February 10. Mr. Garretson said the right to strike must be retained.—*Railway Age*, February 14, 1919.

Nothing has contributed more to the success of the transportation efforts of the American forces in France than the adaptability of the officers and men in charge of this work, according to a correspondent at Tours, France. The American Expeditionary Forces first loaned railway men to the French operating organizations in April, 1918. The enginemen and trainmen operating in exclusively American service numbered 4,531 and those engaged in French service numbered 2,222.—*Railway Age*, February 14, 1919

Communications and Books

O'Fallon Value at 1.4 Times 1914 Figure

RICHMOND, VA.

TO THE EDITOR:

Referring to article entitled "O'Fallon Valuation Case Argued in Supreme Court" which appeared in the *Railway Age* of January 12, 1929, and particularly to the reference on page 157 to statement of Mr. Fisher to the effect that if the Interstate Commerce Commission had applied an index number of 140 to its 1914 valuation the result would have been somewhat less than it did reach.

Mr. Fisher's statement, as shown by the stenographic record of the proceedings, is as follows:

> If we take the factors which were before the Commission in this case, apply the percentages for depreciation or any proper allowance for depreciation to the physical property, and apply the index figure 1.40 to it, you will come out several thousand dollars less than the final valuation actually arrived at by the Commission.

It appears that Mr. Fisher's statement is in error as shown by the following demonstration:

The Commission found a value for the entire common carrier property of the O'Fallon on June 30, 1919, of $850,500. The cost of reproduction less depreciation, based on prices as of June 30, 1914, was found by the Commission to be $678,506, the value of land $50,556 and amount of working capital $50,000. Now, the application of the index figure of 1.40 to the Commission's cost of reproduction less depreciation, $678,506, gives an amount of $949,908 which alone is about $100,000 in excess of the value found by the Commission. Then, the addition of $50,556 for land and the further addition of $50,000 for working capital gives a total of $1,050,464 which is about $200,000 greater than the value found by the Commission and is exclusive of any amount for "Other Elements of Value".

The method which the Commission finds proper for determining value in the recapture periods is to add or subtract from the 1919 value the net increases or decreases in the investment in property devoted to transportation service, thus leaving unchanged the values of property in use as of 1919 and remaining during the subsequent years.

Therefore, it appears to me that Mr. Fisher's statement is not in agreement with the facts.

I am unable to find from a reading of the record that Mr. Fisher's statement was challenged by either the court or opposing counsel. Justice McReynolds, however, several times repeated his question as to whether the Commission had given any attention at all to an increased value after the basic value was reached.

It is suggested that the palpable and without doubt unintentional error in the statement is of sufficient importance to warrant comment by your valuable publication.

C. A. KNOWLES
Valuation Engineer, Chesapeake & Ohio.

New Book

Government Ownership and Operation of Railroads, by Walter M. W. Splawn, Bound in cloth, 478 pages, 8½ in. by 5¾ in. Published by the Macmillan Company, New York. Price $5.

This book is a broad and interesting survey and appraisal of governmental railway operations throughout the world. Its opening chapters include such railway statistics and maps as are available in countries and colonies, both large and small, where either the railway policy is one of governmental operation or some lines are conducted by the state. From these initial premises are drawn later observations and conclusions with respect to governmental operation.

While the author finds many defects in the public operation scheme, he nevertheless concedes that there are times when governmental railway activity is necessary for the development of regions where railway building or operation would not be attractive to private capital. He finds on the whole that governmental transportation systems are less efficiently managed than those under private direction. Political patronage is one of the main causes of this, since political debts are often paid by appointment to railway staffs. Thus the state roads, generally speaking, have many more employees than comparable private lines.

Coming at length to the situation in United States and contrasting the operating efficiency of American railways under governmental control with the marked advance in efficiency since the return to private management, the author sets forth: "Private management has demonstrated that railway transportation in this country can be made to pay its own way, and at the same time pay wages comparable to the favored industries, and carry goods at rates which will allow the greatest freedom of movement and a realization of the maximum benefits to be derived from a division of labor and specialization with ready exchange of goods and services. Under regulation it is practically certain that profits will not be permitted which are unreasonably high***** Would the government cut rates below what is necessary to pay operating expenses, upkeep and the interest on the bonds issued by the government to purchase the railway properties? If so a subsidy would have to be levied from the general public through taxation. Who should pay the transportation bill of the country, the users of the railroads or the taxpayers? Private management has demonstrated that the users can do it and permit the government to tax them more than a million dollars a day in addition. Under private management the public is getting satisfactory transportation service at reasonable cost; the employees are getting stable to increasing wages; and the government is getting nearly four hundred million dollars a year in taxes."

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington D. C.)

Books and Pamphlets

Bandits and the Southern Pacific, by C. B. Glasscock. Narrative of the San Joaquin Valley conflicts in the transition period between the range areas of the 70s and the farms of today that should particularly interest sociologists and that contains enough battle, murder and sudden death to satisfy any taste for "thrillers." 294 p. Pub. by Frederick A. Stokes Co., New York City. $2.50.

Animated Atlas, Dominion of Canada. Text by Oliver Master. Drawings by Arthur Edward Elias. 9 large colored maps with descriptive text presenting the natural and recreational resources of Canada in a way that is a marked advance towards hilarity in economics and is as effective as it is amusing. Railroads (with astonishing trains), highways (plus motor tourists), farming communities (with inhabitants, human, animal and vegetable), mining regions, golfing centers, hunting and fishing "possibilities," water transport from canoes to ocean liners, and airplane routes are among the things shown. 20 p. Pub. by Natural Resources Intelligence Service, Department of the Interior, Canada, Ottawa, Canada. *Apply.*

Periodical Articles

Cracking Open the North, by Courtney Ryley Cooper. What Canadian railways have done in the short space of two years to "open up" hitherto inaccessible resources. Saturday Evening Post, February 9, 1929, p. 6-7, 83, 86.

New German Railway Passenger Cars, by A. Douglas Cook. "As a result of the introduction of the so-called 2-class system on the German Federal Railroad, which included the abolishment of the fourth class, considerable changes in the passenger rolling stock were necessary." Commerce Reports, February 11, 1929, p. 344-345.

Odds and Ends of Railroading

"Man Bites Dog"

Judge Gustav Gehrz of Milwaukee recently ruled that John Liebeck, whose truck ran into the side of a Chicago, Milwaukee, St. Paul & Pacific passenger train, must pay that railway $330 for the damage caused.

We Give Up!

Following all the announcements of railway triplets, comes Crane Engineer James Farrell, of the Akron division of the Baltimore & Ohio, to take the championship. He is not only the father of triplets, aged 14 months, but of twins as well.

"Pigs Is Pigs"

What is believed to be the first shipment of pigs ever made in a poultry car, moved from Lexington, Mass., to West Unity, Ohio, recently over the New York Central. Every one of the 900 porkers arrived in good condition, despite their novel means of transport.

An Alton Dynasty

When George J. Charlton, passenger traffic manager of the Chicago & Alton, died on January 28, the destinies of the passenger traffic department of the Alton passed out of the hands of the Charlton family for the first time in 58 years. His father, James Charlton, served as general passenger agent of the Alton from 1871 to 1900, the son then taking that position. A brother, Alexander D., is general passenger agent of the Northern Pacific at Portland, Ore.

Riding Hobbies

Asa H. Morrill, chief engineer, Maine Central, does nothing by halves. One hobby was deemed insufficient, so Mr. Morrill has three of them. He is a well-known amateur florist, having 80 separate varieties of roses on his grounds, he is an accomplished photographer, and, in his spare time, builds ship models. His recent production is a replica of Columbus' flagship the Santa Maria, complete in every detail as to carronades, tackle blocks, stays and ratlines.

We Have It Twice a Day

One of the first railroads in Germany, when it was under construction over its 3¼ miles of length in 1833, aroused opposition from medical experts of Furth, Bavaria. They reported: "Change of place by means of any kind of steam engine should be prohibited in the interest of public health. The rapid movement cannot fail to produce in passengers the mental disturbance called 'delirium tortuosum'. Granting that the passengers may voluntarily expose themselves to this danger, the government must at least protect the spectators. For the sight of a locomotive rushing along at full speed suffices to cause this fearful disease. It is necessary that a screen, at least 5 ft. high, be erected on each side of the road."

A Historic Tunnel

When the new tunnel of the Nashville, Chattanooga & St. Louis at Tunnel Hill, Ga., was opened for traffic on December 18, 1928, it recalled the opening of the first tunnel at that point in 1849. The tunnel is on the line of the Western & Atlantic, owned by the State of Georgia and leased by the N. C. & St. L., and in 1849, the ardent "states-righters" made quite a gala affair of the formal opening. The entire tunnel was lit by flares, and a procession led by the chief engineer, and brightened by the presence of many ladies, as well as sundry prominent citizens, marched through the tunnel in both directions. Many speeches were made and no less than six bottles of wine were broken over the portals. A small bottle of water from the River Jordan was also poured upon the ground at the east and west portals. The chief tunneller and the tunnel foreman were presented with gold pieces as testimonials of their work. A cannon was placed on the summit of the mountain and seven salutes were fired. The celebration and speech-making lasted until midnight.

Let the Buyer Beware

Macon County in Missouri has been a long time paying for its railroad, the Missouri & Mississippi. In 1867 the county decided that in order to keep up with its sister counties, Knox, Clark and others, it should issue bonds to help pay for a railroad within its borders. But the railroad, like many other phantom projects of the past century, never progressed to the point where it could be depended upon to furnish transportation. Since that time the county has been paying interest on the original bond issue of $750,000. The original obligation had grown to about $2,000,000 but in 1911 was compromised at the smaller amount. On January 1 the county paid the final warrant of $51,315.63. The promoters of the line, which was planned to extend from Keokuk, Iowa, to Glasgow, Mo., left a number of miles of graded roadbed which is now used as a county highway.

Four Brothers Hold Service Record of 205 Years With Erie

An unusual example of combined railroad service by the members of one family is found in the four Redans brothers of the Buffalo division of the Erie, who now have a combined total of 205 years of service with the road. All of this quartet of veteran employees are in the train service, two being passenger conductors and two engineers.

Ernest G. Redans is the oldest in point of service. He started in 1866, and worked in various capacities, including freight brakeman. In 1872 he was promoted to freight conductor and 10 years later to passenger conductor, which position he holds at the present time, rounding out his sixty-third year with the same road.

John F. Redans has a service record of 57 years, having been retired in September, 1928, after serving as freight brakeman, freight conductor and finally passenger conductor, the position he held at the time of his retirement. He entered the service of the Erie in 1872.

August H. Redans entered service in 1886 as a locomotive fireman, being promoted to engineer in 1897, which position he now holds, with a total record of 43 years, while Frank M. Redans began service in 1887 as a locomotive fireman and was promoted to engineer in 1897. He is still going strong in that position with a total service record of 42 years. All four are members of the Erie Veterans Association.

Scraps

What is believed to be a record in "burrowing" is to be found on the railway between Kalka and Simla, in India, where there are 102 tunnels in one stretch of 94 miles. Most of them are quite short, the longest being about three-fourths of a mile.

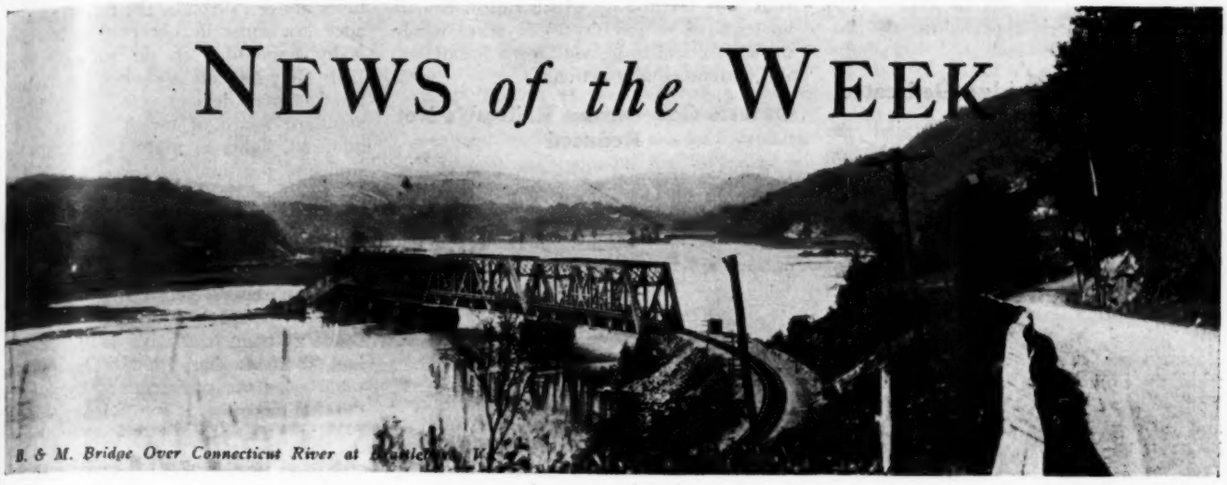
During the present revolutionary and counter-revolutionary period in China, it is the custom to seize locomotives and hold them as hostages. Since the success or failure of the revolution depends largely upon rail transport, this is an effective military gesture.

The New York, New Haven & Hartford boasts three employees who received the British Military Medal direct from King George V. They are F. P. Carnes, fireman, Arthur P. Terrill, conductor, and Richard Parkinson, trainman.

A new profession, that of seat hunter, has come into being at Paddington station, London. The Great Western has employed ushers to aid passengers in embarking. The seat-hunters are distinguished by distinctive arm bands.

A tablet was erected recently at Bridgeport in memory of Raymond W. Harris, formerly an employee of the New York, New Haven & Hartford, who was killed in action at Mercatel, France, September 13, 1917, and was the first soldier in the A. E. F. to fall.

NEWS *of the* WEEK



B. & M. Bridge Over Connecticut River at Brattleboro, Vt.

THE WESTERN RAILWAY CLUB will hold its next meeting at Hotel Sherman, Chicago, on February 18. The speaker will be M. J. Gormley, of the American Railway Association.

"STEEL RAILS AND THEIR FAULTS," will be the subject of an address to be presented before a meeting of the Railroad section of the Western Society of Engineers, Chicago, on March 4, by Charles W. Gennet, Jr., vice-president of the Sperry Rail Service Corporation.

THE CINCINNATI RAILWAY CLUB will hold its next meeting on February 19, at the Chamber of Commerce, Cincinnati. This will be a dinner party at six o'clock, with musical entertainment. Mr. Radford, publicity agent of the Big Four will speak on "The Railroad man as a Citizen."

PREMIER SIMON F. TOLMIE of British Columbia has announced that arrangements have been made between the provincial government and the Canadian Pacific and Canadian National for a joint survey of the natural resources of the territory served by the Pacific Great Eastern Railway in that province.

BILLS TO AMEND Section 17 of the Interstate Commerce act (in accordance with a recommendation made by the Interstate Commerce Commission in its annual report) to authorize the Commission to delegate authority to individual commissioners, have been introduced in the Senate by Senator Fess, of Ohio, and in the House by Representative Summers, of Washington.

THE SENATE on Feb. 12 and the House on Feb. 13 passed a conference report on the independent officers' appropriation bill, carrying appropriations for the Interstate Commerce Commission including an increased amount added by Senate amendments to enable the Commission to employ 25 additional examiners. Commissioners Eastman and Porter of the I. C. C. testified before the Senate Committee Feb. 14, on the Fess Consolidation bill and the committee decided to meet Friday to vote on the question of reporting the bill.

THE READING has increased the wages of its shopmen, as of February 1, four cents an hour. The machinists, etc., will receive 81 cents an hour and painters, carpenters and certain other classes, 74 cents an hour. An increase, ranging from one to four cents an hour was also granted to 300 employees in the signal department. This latter amounts to an annual payroll increase of $40,000.

THE EXECUTIVE COMMITTEE of the American Electric Railway Association at a meeting in Indianapolis on January 25 passed a resolution extending thanks to manufacturers who have exhibited at the conventions of the association for acceding to a request of the association to confine such exhibits to the regular exhibition hall provided for this purpose, rather than having them in hotel rooms or elsewhere. The committee also resolved to set aside the morning of September 30 and the afternoon of October 2 during the forthcoming convention at Atlantic City (September 28-October 4) during which no convention sessions will be held and during which delegates will be asked to visit the exhibits.

THE MOFFAT TUNNEL COMMISSION on January 30 served notice upon the Denver & Salt Lake that it would expect the railroad to pay a yearly rental of $560,067 for the use of the Moffat tunnel in Colorado instead of the rental of $345,000 per year specified in the present contract between the road and the commission. The larger amount would cover the railroad's share of the interest and retirement fund on the total bond issue of $15,470,000 rather than on the original bond issues of $9,220,000. On January 31, the D. & S. L. appealed to the federal court at Denver, Colo., for an injunction to restrain the commission from collecting an increased rental, or from cancelling the existing lease for the tunnel's use.

N. P. Land Grants

A joint resolution extending to June 30, 1930, the period in which the Secretary of the Interior is directed by Congress to withhold his approval of the adjustment of Northern Pacific land grants, pending an investigation which has been conducted by a joint congressional committee, was passed by the House on February 9.

Pennsylvania M. W. Men Receive Advance in Pay

The Pennsylvania has advanced the pay of employees in the department of maintenance of way and structures, beginning on February 1, to the extent of about $450,000 a year, the increase being shared by between 7,000 and 8,000 employees. Track foremen are advanced $2.50 a month; bridge and building foremen and inspectors and their assistants, $5 a month. Plumbers, water service repair men, blacksmiths, machinists, motor car repair men, electricians, cabinetmakers and bench carpenters, four cents an hour; carpenters, bricklayers, painters, masons, iron workers and their helpers, track laborers, pumpers, teamsters, chauffeurs, work equipment engineers, firemen and assistant track foremen, one cent an hour.

This road also has made an increase of four cents an hour in the wages of its telegraphers, to take effect March 1. The increase will benefit about 4,200 employees and will amount to $450,000 annually. The company at the same time gives these men a six-day week, which is said to open 276 new positions.

Appeal Taken in Florida Tax Suit

The railroads of Florida, in a case known as "L. & N. R. R. et al vs. Ernest Amos, state comptroller, Railroad tax injunction suit," are seeking injunctive and other relief alleging that the Florida tax authorities have been assessing rolling stock and other personal property of railroads on a basis of 50 per cent of the actual value, while assessing personal property owned by other than railroads at approximately 20 per cent of the actual value. The railroads further allege that millions of dollars of personal property in the state escape taxation entirely. The case was tried in the lower court which on October 6, 1928, decreed that the complainants should pay personal property taxes upon assessments based on

26.8 per cent of the actual value. The case has now been appealed to the Supreme Court of the state.

Baring Cross Bridge Dedicated

The Missouri Pacific celebrated the opening and dedication of its new Baring Cross bridge over the Arkansas river between Little Rock, Ark., and North Little Rock on February 2 with ceremonies which were witnessed by more than 3,000 persons. A retired engineman, Charles Seymour, who has been in the service of the Missouri Pacific for 54 years, and who piloted the first train over the old Baring Cross bridge in 1873, ran the first train, the Southerner, over the new bridge. Following addresses by Governor Parnell and railroad officers L. W. Baldwin, Jr., broke a bottle of water from Arkansas Hot Springs, on the south approach to the bridge.

Barge Line Appropriation Passed

The $10,000,000 appropriation for the Inland Waterways Corporation, providing in advance for proposed expenditures for the next three fiscal years, was passed by the Senate on February 8, as a part of the War Department appropriation bill. It is in the same form in which it had previously passed the House, and was passed without any discussion of the item. The bill provides that $2,500,000 shall be immediately available; and of the balance not more than $1,500,000 shall be withdrawn from the Treasury during the fiscal year 1930, not more than $3,000,000 during the fiscal year 1931, and not more than $3,000,000 during the fiscal year 1932. The first expenditures proposed are for additional barges and tow-boats and terminal developments, and it is proposed to extend the present services of the barge line to the Missouri and Illinois rivers as these rivers are made ready for navigation.

Railroad Taxation in Washington

Three measures affecting railroad taxation in the State of Washington have been drafted by R. G. Sharpe, assistant attorney-general, coincident with the tax litigation sponsored by Washington railroads in 21 counties and involving $8,000,000. The proposed laws are: (1) To provide for terminal taxation at rates applying in counties of the terminals. Under the present law the value of the Seattle, Tacoma and Spokane terminals is spread throughout the state on a mileage basis, giving the railroads the benefit of lower rates in the outlying counties. Mr. Sharpe estimates that terminal assessments will raise railroad taxes by more than $300,000; (2) To require railroads to report their cost of reproduction, to define the elements of value which taxation officers are to consider, to validate the present method of distribution of values among counties and to provide for the allocation of a portion of the value of the railroad system as a whole to this state; (3) To limit the use of the injunction in tax contests and provide a substitute method by which railroads will be required to pay protested taxes pending appeal and to provide for a joinder of the various county actions.

Ontario Government Railway's Net Reduced

While increased gross revenue was shown in all departments of the Temiskaming & Northern Ontario for the year ending October 31 last, there was a decrease in net earnings of $8,450, or 7 per cent below the 1927 figures, according to the financial report which was tabled in the Ontario legislature last week by the provincial secretary.

Revenue totaled $5,339,258, an increase of $186,726 over 1927. Expenditures amounted to $4,136,128, an increase of $195,177, or 4.95 per cent over 1927. Thus the net earnings were $1,203,129 for 1928, as compared with $1,211,580 in 1927.

George W. Lee, chairman of the railway commission, stated in the report that "the reduction in net revenue is directly attributable to certain extraordinary expenses and charges arising in the current year which had no counterpart in 1927."

Hand to Mouth Buying

M. J. Gormley, chairman of the Car Service Division of the American Railway Association, will speak at a dinner meeting of the New York Metropolitan Section of the Taylor Society on February 28, 1929, on "The Railroads Made Hand to Mouth Buying Possible—How It Was Done." The meeting will be held in the Fraternity Clubs Building, 22 East Thirty-eighth street, New York City, and reservations for dinner tickets can be made by addressing the secretary of the New York Metropolitan Section of the Taylor Society, in care of the National Retail Dry Goods Association, 225 West Thirty-fourth street. The chairman of the meeting will be R. G. Wagenet, director of the New York Building Congress, and chairman of the Metropolitan Section of the Taylor Society. The discussion will be led by Major Talbot O. Freeman, vice-president of the Fairchild Aviation Corporation, and by Edward F. Loomis, secretary of the Motor Truck and Bus Division of the National Automobile Chamber of Commerce.

Proposed Railroad Legislation in Missouri

Several bills to regulate steam and electric railroads operating in Missouri have been presented to the general assembly now in session in Jefferson City. Under House Bill No. 115, where more than one locomotive is used to haul a train, they must be coupled together on the head end of the train. House Bill No. 133 would require railroads to ventilate tunnels so as to keep them free of noxious and poisonous gases while trains are passing through; penalty, $100 a day.

House Bill No. 134 fixes the crews for all trains operated over the main lines of any railroad on which three or more trains are operated per day, as one engineman, one conductor and one flagman. House Bill No. 228 stipulates that in the construction of bridges or other structures above railroads, the minimum clearance law must be observed unless physically impossible to do so. By House Bill No. 230 all switches, semaphores, fixed signal devices, etc., must have a standard board or target by day and, in addition, lights at night to indicate location and position.

January Locomotive Shipments

January shipments of railroad locomotives from principal manufacturing plants, based on reports received by the Department of Commerce, totaled 23 locomotives, as compared with 44 in December and 47 in January, 1928. The following table gives the shipments and unfilled orders of locomotives for January, 1928 and 1929 and the 1928 totals:

RAILROAD LOCOMOTIVES

Shipments

Year and Month	Total	Domestic		Foreign	
		Steam	Electric	Steam	Electric
1929 January	23	6	6	11	..
1928 January	47	22	23	2	..
Total (year)	550	367	92	87	4

Unfilled orders, end of January

	Total	Domestic		Foreign	
		Steam	Electric	Steam	Electric
1929	278	251	21	6	..
1928	222	161	38	19	4

Face the Steps

"Face the Steps" the title of Circular No. 215, which has been issued by the Committee on Education, Safety Section, A. R. A., tells, in a single sentence, the message which the committee wishes to put before safety committees for their attention during the month of March. It is addressed to enginemen, firemen, conductors, brakemen, switchmen, mechanics, hostlers and engine supplymen; and means simply that when getting off a locomotive, it is safer to get off backward than to dismount face first. The records of injuries to employees show numerous cases where an injury has been due to getting off with back to the steps. This, says the committee, is unsafe and, therefore, is declared to be the wrong way. Those whose duties require them to get on or off locomotives or cars are enjoined to use good judgment in choosing the right way; and those whose duty does not require this, are advised to stop it altogether. In other words do not get off (or on) locomotives (or cars) unless you have a duty there.

C. N. R. Acquisition of Other Lines

At the opening of the Canadian Parliament last week it was announced in the Speech from the Throne, which is supposed to disclose the Government's legislative intentions for the session, that Parliament would be asked to approve of the acquisition for the Canadian National of certain lines in Eastern and Western Canada. It is learned that the lines referred to in Western Canada are the three roads in Alberta which the Canadian Pacific and the Canadian National are to jointly purchase from the Alberta government for $25,000,000. Those lines include the Edmonton, Dunvegan & British

Columbia, with a mileage of about 450, and the Alberta Great Waterways line. In the East it is proposed that the Canadian National take over the St. John Valley Railway in New Brunswick. This road with termini at St. John in the south and Centreville in the north was built some years ago by the Provincial government but it has never paid its way owing to lack of connections in the north. During the past three years the Canadian National has made a careful examination of its physical and financial condition. When acquired it will extend from its northern terminus, Centreville, to Grand Falls to connect with the National Transcontinental section of the Canadian National system. Its value has been variously estimated at from $6,000,000 to $7,000,000.

Colorado & Southern Narrow-Gage Line Abandonment

The eight-day hearing at Denver, Colo., before Haskell C. Davis, Interstate Commerce Commission examiner, on the application of the Colorado & Southern for permission to abandon its narrow-gage line and branches between Waterton, Colo., and Leadville, 185 miles, was brought to a close on February 6. As the hearing ended, the examiner incorporated in the record an action by the board of directors of the C. & S. confirming an earlier offer by Robert Rice, vice-president and general manager, to give the line, with rolling stock, to any person or group who would operate it, with the proviso that it should be returned for junking at any time it might cease operations.

The action was originally initiated by the Denver Water Board which desired a portion of the territory occupied for a projected water supply reservoir. At the hearing, Malcom Lindsey, special counsel for the water board, testified that the cost of relocating 19 miles of the line, about $3,000,000, would be borne by the water board, the city of Denver and the county of Denver.

Railway officers testified to the difficulties encountered in operating the line during the winter months and to the scarcity of profitable freight traffic. C. W. Link, chairman of the state tax commission, testified that the C. & S. reports an annual loss of $423,000.

A Rail, Air and Waterway Symposium

The Chicago Railway Equipment Company held its thirty-sixth annual dinner on February 5, in Chicago, at which time transportation in its several present-day phases was discussed. The railway, the highway, the waterway and the airway were reproduced in miniature in the table decorations. A table, 36 ft. long and coupled to a 12 ft. round table at each end, had for its chief decorative feature a complete railroad right-of-way, consisting of two standard railroad tracks bearing both freight and passenger trains of the varied, as well as modern, types. On one side of this modern railroad was a canal on which were plying tug boats, towing barges and other vessels. On the other, was a modern highway with all types of motor vehicles, including the modest "flivver," the typical automobile, the modern motor freight truck and the latest pattern of the motor bus. Above the long table were suspended miniature replicas of various types of airplanes. The program included the following addresses: "The Evolution of Transportation" by Frank W. Noxon, secretary of the Railway Business Association; "The Railways and the Highways," by Samuel O. Dunn, editor of the *Railway Age;* "The Waterways" by Dr. H. G. Moulton, president of the Brookings Institution, Washington; and "The Airways" by Earle H. Reynolds, president of the National Air Transport, Inc. James A. Emery, general counsel of the National Association of Manufacturers, Washington, spoke on questions related to the constitution of the United States.

A. R. E. A. Convention Program

The American Railway Engineering Association will hold its thirteenth annual convention at the Palmer House, Chicago on March 5, 6 and 7, morning sessions beginning at 9 and afternoon sessions at 2. The program for this meeting follows:

First Day—Tuesday, March 5

President's Address—W. D. Faucette
Reports of secretary and treasurer
Reports of committees on: Standardization
Water Service and Sanitation
Roadway
Ballast
Ties
Address—The new Southern Pacific bridge across Carquinez Straits, by C. R. Harding, engineer of standards, S. P.
Reports of committees on: Uniform General Contract Forms
Shops and Locomotive Terminals
Clearances
Co-operative Relations with Universities
Evening—Visit to Railway Appliances Exhibit

Wednesday

Reports of committees on: Rules and Organization
Yards and Terminals
Rivers and Harbors
Wood Preservation
Stresses in Railroad Track
Address by Major-General Edgar Jadwin, chief of engineers, United States Army.
Reports of committees on: Grade Crossings
Track
Electricity
Signals and Interlocking

Thursday

Reports of committees on: Iron and Steel Structures
Wooden Bridges and Trestles
Masonry
Records and Accounts
Buildings
Address by O. H. Caldwell, Member, Federal Radio Commission
Reports of Committees on: Rail
Economics of Railway Location
Economics of Railway Operation
Economics of Railway Labor

Railway Revenues and Expenses for 1928

Class I railways in 1928 had a net railway operating income of $1,193,133,741, at the rate of 4.71 per cent on their property investment, as compared with $1,085,-141,596, or 4.38 per cent, in 1927, according the compilation made by the Bureau of Railway Economics of reports filed by the carriers.

In the face of an increase as compared with 1927 of five-tenths of one per cent in the volume of freight traffic, the reports for 1298 show a decrease of 3.4 per cent in operating expenses, which amounted to $4,472,480,262 in 1928. Operating revenues were $6,177,761,036, a decrease of five-tenths of one per cent as compared with 1927. The operating ratio for the year was 72.40, as compared with 74.54 in 1927, and 73.14 in 1926. Transportation expenses amounted to $2,-097,151,101, a reduction of 3.2 per cent, expenditures for maintenance of way and structures were $845,612,454, a reduction of 4 per cent, and expenditures for maintenance of equipment amounted to $1,174,-424,259, a decrease of 4.5 per cent. Taxes for the year amounted to $395,066,480, an increase of 3.5 per cent.

Thirteen Class I roads operated at a deficit in 1928, of which six were in the eastern district, two in the southern and 5 in the western.

The net railway operating income by districts in 1928, with the percentage of return based on property investment, was as follows:

New England Region ...	$ 47,462,038	5.22%
Great Lakes Region	208,296,512	4.88%
Central Eastern Region ..	259,334,660	5.00%
Pocahontas Region	79,635,584	7.57%
Total Eastern District ..	594,728,794	5.21%
Total Southern District .	133,803,577	4.14%
Northwestern Region ...	142,243,041	4.05%
Central Western Region ..	217,122,430	4.53%
Southwestern Region ...	105,235,899	4.47%
Total Western District .	464,601,370	4.36%
UNITED STATES ...	$1,193,133,741	4.71%

For the month of December the net railway operating income was $94,385,667, or at the rate of 4.44 per cent, as compared with 2.61 per cent in December, 1927. Operating revenues for the month amounted to $495,815,838, an increase of 6 per cent. Operating expenses amounted to $357,570,262, a decrease of 5.4 per cent.

Prizes for Safety Committees

The Bethlehem Steel Corporation calculates the success of its safety committees on the basis not only of the number and percentage of casualties to employees but makes record also of the percentage of fatalities and of severity; the term "severity" being based on the number of days' time lost by injured employees. About 70,000 persons are employed by the corporation and its subsidiaries, and members of safety committees are changed every three months so that in the course of a year approximately one-half of the whole body of employees see active service on safety teams. For the last year, the improvement over the preceding year, in all the plants aggregated, was as follows: In severity, 24.2 per cent; in frequency, 28.4 per cent; and in fatalities, 34.2 per cent. The best record on the basis of severity was made by the Steelton (Pa.) shops which had an average payroll for over 5,000 employees. These shops won the annual trophy by reducing accident severity 54.4 per cent. The trophy goes to the group making the best record. But aside from this, cash prizes of $1,000, $500, and $250 are awarded every three months to the group winning the first, second and third places, respectively. There are 11 groups.

The quarterly prize money, which amounts in all to $7,000 a year, is disposed of according to the decision of a conference between the management and

the representatives of the winning groups. In most cases, it is distributed to members of the safety teams. Several groups last year used their money to hold picnics for all employees who were serving on safety teams. In another case, the money was used as rewards to individuals for meritorious service in the saving of life or saving the company's property.

Incidentally, the keeping of the record of days lost makes possible a computation of the wages lost or saved. Thus, it is calculated that the reduction, in 1928, of 166,000 days, as compared with 1927, means a saving of $750,000 to the employees in wages.

N. Y. C. Safety Trophies

Silver trophies for excellence in employee safety records, awarded in accordance with an offer for the year 1928 which was promulgated by President P. E. Crowley, of the New York Central, were presented on February 13, by President Crowley, at a brief ceremony in the general offices of the company in New York City. The several roads in the New York Central system are classified at the end of the year according to improvement made in these records and the trophies for the year now closed go to the Cleveland, Cincinnati, Chicago & St. Louis as at the head among the large roads in the system and to the Chicago River & Indiana, as the leader among the smaller roads. The latter is a freight terminal road operated in connection with the Chicago Junction. The trophies, each a duplicate of the other, are symbolic female figures of gold and silver standing, with the pedestal, about 36 inches in height.

Speaking before a large gathering of officers of the road General safety agent C. E. Hill, gave a brief statement of the improvement made since 1923 in the safety of the lives and limbs of employees on duty. Incidentally, he remarked that fatalities to passengers had been reduced in these five years about 62 per cent, and injuries to passengers 88 per cent. The employee record shows fatal injuries reduced from 203 in 1923 to 113 in 1928; and injuries from 13,437 in 1923, to 4,695 in 1928. The goal set by the A.R.A. in 1923 has been far exceeded.

President Crowley in presenting the trophies spoke briefly of the different records. Mr. Crowley like all officers interested in this work, holds that on any part of the road or in any class of service, where the idea of safety is made a part of the everyday work and life of the men, there must be a progressive reduction in the ratio of injuries to man hours.

The trophy for the Big Four was received by Vice-President H. A. Worcester, who gave credit not only to the safety organizations on his road but to the active and intelligent interest which now prevails among the men themselves. W. J. O'Brien, general manager of the Chicago River & Indiana, spoke in a similar vein, and stated that 1928 was the first year in the history of his road in which no employee had been killed.

I.C.C. To Prepare Consolidation Plan Unless Congress Amends Law

Unless the consolidation provisions of the transportation act are amended by Congress at this session the Interstate Commerce Commission is unanimously in favor of proceeding with the preparation of a plan for the consolidation of the railways "into a limited number of systems" as provided in Section 5 of the act, Chairman Lewis of the commission told the Senate committee on interstate commerce on February 13.

Chairman Lewis and Commissioner Porter appeared before the committee in executive session to discuss the Fess bill, as revised to some extent by a subcommittee of which Senator Fess is chairman, which was submitted to the full committee last week. According to Chairman Watson of the committee Mr. Lewis stated that the commission had taken a vote the day before on the question of whether it is still in favor of a repeal of that part of the law relating to a plan, but the vote was 5 to 5. It was unanimous, however, it was stated, that the commission should wait no longer for Congress to act and that if no bill is passed it should proceed to comply with the directions of the act of 1920.

Commissioner Porter and some others of the commissioners have long felt that the commission should no longer remain inactive, after having recommended in its annual reports for four years that the existing requirement that it prepare and adopt a plan be omitted, but that it was its duty to comply with the law. Others, it is understood, have felt that it would be inconsistent to go ahead with the work on a plan in view of its repeated recommendations.

Commissioner Porter, to whose docket the subject of consolidation was assigned by the commission last year after the resignation of Commissioner Hall, has taken some steps toward the preparation of a plan to be submitted to the commission, but, it is understood, without express direction from the commission to do so. The committee expected to hear from Commissioner Porter on February 14.

* * *

On the Pennsylvania

Traffic

A tentative agreement between the railways and the Inland Waterways Corporation regarding the basis of divisions of joint rail and barge rates has been reached as the result of a series of conferences recently held in Washington, it was announced on February 1 by the Secretary of War. The agreement is subject to ratification by the railways and by the Secretary of War.

The Southern Pacific of Mexico, on February 15, established tri-weekly passenger service between Los Angeles, Cal., and Guadalajara, Jal., with direct connections for Mexico City. Trains with standard Pullman equipment and dining cars will be run three days a week in each direction between Los Angeles and Guadalajara. In addition, local trains will be run three times a week between Nogales on the Arizona border and Guadalajara. All trains will make close connections, with Pullman service, to Mexico City. This will give practically daily through transportation along the Mexican west coast.

The Texas & Pacific, in conjunction with the Standard Air Lines, Inc., on February 4 inaugurated a daily rail-air service from St. Louis, Mo., to the Pacific coast with planes operating between El Paso, Tex., and Los Angeles, Cal. The westbound plane connecting with the Sunshine Special, which arrives at El Paso at 8:00 a. m., leaves that city at 9:00 a. m., and arrives at Los Angeles at 4:30 p.m., making scheduled stops at Douglas, Arizona, Tucson and Phoenix. The eastbound plane leaves Los Angeles at 8:00 a. m., and arrives at El Paso at 5:30 p.m., making the same scheduled stops and connecting with the Texan to St. Louis, which leaves El Paso at 7:15 p.m. This new service places a westbound passenger in Los Angeles 17 hrs. 55 min, earlier than by the all-rail route via the Southern Pacific with which the T. & P. Sunshine Special and the Texan connect at El Paso. Eastbound the air service enables a passenger to leave Los Angeles 17 hours later than via rail and still connect with the Texan at El Paso. A one-way fare of $77.50 for the air ride is on the basis of about 10 cents per mile, with transportation between the airports and railroad station included. Single-motor Fokker cabin planes carrying eight passengers are being used.

The "Century" in 1928

The Twentieth Century Limited of the New York Central—20-hour trains between New York and Chicago, 964 miles—are said to have earned gross revenues in the year 1928 of more than $11,000,000. Running in more than two sections, each way, every day, the total number of sections operated in the 12 months was 2,151. This number is 110 less than were run

in 1927, the company having introduced an increased number of powerful locomotives, able to haul longer trains. Eleven millions divided by 2151 x 964 shows average earnings of $5.35 per train mile.

Records of Hoch-Smith Investigation

The Interstate Commerce Commission has rescinded its ruling of July 3, 1928, in its rate structure investigation, which conditionally authorized the incorporation in the record by a party at the hearing in one "part" of Docket No. 17000 of any properly admissible portion of the record in another "part," without producing a copy of such portion for physical incorporation and without furnishing copies to all parties. At all future hearings in any "part" of No. 17000 the several "parts" will be treated for the above purpose as distinct and different proceedings, and Rule XIII, paragraph *b*, of the Rules of Practice will be observed.

Rate on Chicory Reduced Under Hoch-Smith Resolution

The Interstate Commerce Commission has ordered a reduction from 44 cents to 29 cents per hundred pounds in the rate on chicory, in carloads, from Port Huron, Mich., to New York, N. Y., prescribing the lower rate, under the terms of the Hoch-Smith resolution, as "the lowest possible rate compatible with the maintenance of adequate transportation service and necessary to promote the freedom of movement of the specified product of agriculture now affected by depression." At the same time, however, the commission authorized an increase in the carload minimum from 30,000 to 40,000 pounds.

"Considering all the evidence of record," the report said, "it cannot fairly be said that the rate assailed is higher than a reasonable maximum rate over either route. On the other hand, the evidence shows that the 29-cent rate now moves a large tonnage of grain products and related commodities, many of which are of greater value than chicory, require the same or greater attention in transit, and are subject to greater risk of loss and damage. We therefore conclude that the 29-cent rate lies within the zone of reasonableness and that its establishment will not be incompatible with the maintenance of adequate transportation service." The report was by Division 5, Commissioners Woodlock, Brainerd and Farrell.

Express Refrigerator Service Required for Strawberries and Dewberries

Establishment of an express refrigerator carload service for the transportation of strawberries from Florida, North Carolina and Alabama to points in Official Classification territory and dewberries from North and South Carolina to the same destinations was directed by the Interstate Commerce Commission in a report made public on February 12 as the result of its investigation of the adequacy of the present freight service for this transportation. It found the freight service inadequate, but entered no order at this time, saying that the carriers will be expected to submit within 60 days plans for the establishment of the express service.

Commissioner Woodlock dissented, saying that in his judgment the record falls far short of demonstrating the inadequacy of the freight service and the need for the establishment of express service and that the commission should not impose upon the carriers such an expenditure as will be entailed save upon the clearest evidence of its necessity. Commissioner Farrell also dissented.

The majority report, by Commissioner McManamy, said that many shippers contended that the present freight service fails to meet the requirements for the reason that it does not permit such expansion of distribution territory as will enable the industry to develop to its fullest possibilities, and that the time consumed in transportation controls production, the area of distribution, and the price received by the grower. The carriers objected on the ground that the express refrigerator cars would be in use only a small portion of the time. Four of the roads estimated that 1,546 cars would be required.

Freight Traffic in 1928

The volume of freight traffic handled by the Class I railroads in 1928 amounted to 476,994,254,000 net ton-miles, according to a compilation by the Bureau of Railway Economics. This was an increase of 2,304,139,000 net ton-miles, or five-tenths of one per cent, above the volume of traffic in 1927 but a decrease of 11,707,570,000 net ton-miles, or 2.4 per cent, below that of 1926.

In the Eastern District there was a decrease of 1.4 per cent, while the Southern district showed a decrease of 5.4 per cent. The Western District, however, reported an increase of 5.4 per cent.

In December, freight traffic amounted to 37,644,730,000 net ton-miles, an increase of 8.8 per cent above that of the same month in 1927. In the Eastern District, the volume of freight in December showed an increase of 12.2 per cent, while the Southern district reported an increase of 5 per cent. The Western district reported an increase of 5.8 per cent.

The daily average movement of freight cars in 1928 was 31.3 miles. This was an increase of one mile over the daily average for 1927 and an increase of nine-tenths of a mile above that for 1926.

The highest daily average for any one month on record was established in October, 1928, when an average of 36.2 miles was attained. This exceeded by 1.5 miles the best previous average, which was in October, 1927.

The average load per freight car in 1928, including less than carload freight as well as carload freight, was 26.7 tons. This was a decrease of five-tenths of one ton under the average for 1927 and a decrease of seven-tenths of a ton below the average for 1926.

Equipment and Supplies

Locomotives

THE RUTLAND is inquiring for three Pacific type locomotives.

THE UNION PACIFIC contemplates buying 25 locomotives and 20 tenders.

THE PERE MARQUETTE is inquiring for 10 eight-wheel switching locomotives.

THE GREEN BAY & WESTERN has ordered two locomotives of the 2-8-0 type from the American Locomotive Company.

THE NEWFOUNDLAND RAILWAY has ordered two Pacific type locomotives from the American Locomotive Company.

THE BOSTON & MAINE has ordered five eight-wheel switching locomotives from the Baldwin Locomotive Works.

Freight Cars

THE NEVADA CONSOLIDATED COPPER COMPANY is inquiring for 10 air-dump cars of 20 cu. yd. capacity.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS is inquiring for 150 flat bottom gondola cars and 50 hopper cars.

THE CARNEGIE STEEL COMPANY is asking for prices on 22 mill type gondola car bodies of 75 tons' capacity.

THE ANDES COPPER MINING COMPANY is inquiring for 10 flat cars of 40 tons' capacity.

THE AMERICAN STEEL FOUNDRIES has ordered three air-dump cars of 30 cu. yd. capacity from the Magor Car Corporation.

THE NORTHERN PACIFIC is inquiring for 500 automobile cars, 50 ft. long and of 50-tons' capacity.

THE FT. WORTH & DENVER CITY is contemplating the purchase of 100 new or rebuilt gondola cars of 50-tons capacity.

THE AMERICAN SMELTING & REFINING COMPANY has ordered 25 gondola cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 19.

THE ATCHISON, TOPEKA & SANTA FE has ordered 200 flat cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of December 8.

THE CHILE EXPLORATION COMPANY has ordered 80 ore cars of 70 tons' capacity from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 19.

THE PERE MARQUETTE has ordered 1,000 box cars from the Pressed Steel Car Company and 400 composite gondola cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 12.

THE SUN OIL COMPANY, Philadelphia, Pa., has closed a contract with the Standard Tank Car Company for 200 tank cars of 10,000 gal. capacity, 100 tank cars of 8,000 gal. capacity, 20 tank cars of 2,600 gal. capacity and 20 tank cars of 4,500 gal. capacity.

THE ILLINOIS CENTRAL has placed orders for the following equipment:

700 automobile cars, 40 ft. long, American Car & Foundry Company
300 automobile cars, 50 ft. long, Mt. Vernon Car Manufacturing Company
750 hopper cars, 50 tons capacity, Pullman Car & Manufacturing Corporation
425 hopper cars, 70 tons capacity, Standard Steel Car Company
425 hopper cars, 70 tons capacity, General American Car Company.
200 flat cars, 50 tons capacity, Bettendorf Company
100 gondola cars, 50 tons capacity, Ryan Car Company

Of these, 100 hopper cars and 100 gondola cars are for the Chicago & Illinois Western. Inquiry for this equipment was reported in the *Railway Age* of Jan. 12.

Passenger Cars

THE CHESAPEAKE & OHIO is inquiring for 12 express cars.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 10 gas-electric rail motor cars. One combination passenger, baggage and mail car will be built by the Standard Steel Car Company and will be equipped with a 400 hp. Sterling gasoline engine and Westinghouse electric generator and motor. Two combination passenger, baggage and mail cars and seven power cars will be constructed by the St. Louis Car Company. The two combination cars will be equipped with 400 hp. and the seven power cars with 800 hp. Electromotive Company gasoline engines, while both types will contain General Electric generators and motors.

Signaling

THE SOUTHERN has ordered from the General Railway Signal Company a mechanical interlocking, four levers, for Jackson, Ga.

THE NEW YORK CENTRAL, Lines West, have placed a contract with the General Railway Signal Company covering the installation of an all-electric car retarder system for the Toledo car dumper at Toledo dock, Toledo, Ohio. This will consist of six model 6 switch layouts complete, 3 double rail retarders complete, one power-operated skate and one control machine.

THE CHICAGO & NORTH WESTERN has ordered from the General Railway Signal Company, equipment covering a dispatching system superimposed on an existing system of A. P. B. semaphore signals, for a distance of four miles between Green Bay and Duck Creek, Wis. The dispatching machine will consist of six working levers in an eight space machine. An order has also been given to the General Railway Signal Company for one continuous type train control engine equipment, for application to a motor car.

THE LEHIGH VALLEY has placed a contract with the General Railway Signal Company covering the installation of an all-electric car retarder system on the east and westbound Oak Island yards at Newark, N. J. This installation will include 34 retarders, 51 power-operated switches, 53 power-operated skates and 51 switch signals operated from control machines located in four separate towers. One set of complete power apparatus will be installed to serve both yards. Each power-operated switch will be protected by track circuit locking. Installation will be made by the forces of the General Railway Signal Company.

Iron and Steel

THE DULUTH, MISSABE & NORTHERN is inquiring for 1,800 tons of structural steel for miscellaneous bridge work.

THE NEW YORK, CHICAGO & ST. LOUIS has ordered 275 tons of structural steel, for a fruit auction warehouse at Cleveland, Ohio, from the Massillon Bridge & Structural Company.

Machinery and Tools

THE CHICAGO, INDIANAPOLIS & LOUISVILLE is inquiring for a journal turning lathe.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for a 6 ft. radial drill and a 6 ft. squaring shear.

THE SILVER "CORN CUP" of the Southern, awarded each year to the producer of the best ten ears of corn in the southern states has been awarded for 1928 to Charles M. Long of Bremen, Haralson County, Georgia.

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On the New York Central

Supply Trade

R. F. Crego, formerly sales manager of the L. C. Smith Bearing Company, Chicago, has been appointed representative of **Foote Bros. Gear & Machine Company.**

The National Accessories Company, Inc., 214 Harrison building, Philadelphia, Pa., has been appointed railroad representative for **The Philip Carey Company,** Cincinnati, Ohio.

Arthur Harvey, formerly district engineer of the Missouri-Kansas-Texas at Muskogee, Okla., has been appointed sales representative of the **American Hoist & Derrick Company,** Chicago.

R. L. Nutt, Jr., National Bank of Commerce building, Norfolk, Va., has been appointed district sales representative in Virginia for the **Woodings Forge & Tool Company,** Verona, Pa.

Cutler-Hammer, Inc., Milwaukee, Wis., has acquired the business of the **Trumbull Vanderpoel Electric Manufacturing Company,** Bantam, Conn., which will be operated as a subsidiary under its present name.

Otis B. Duncan, a manufacturers' agent at Chicago, has been appointed representative in the middle west for the **Wood Shovel & Tool Company,** Piqua, Ohio, and the American Switch Point Protector & Railroad Company, Denver, Colo.

E. S. Fickes of Pittsburgh, Pa., vice-president in charge of engineering of the **Aluminum Company of America,** was elected a director of the company at a recent meeting of the board and **W. C. Neilson,** of Philadelphia, in charge of the bauxite interests of the company, was elected a vice-president.

O. M. Hullinger, sales engineer for the **Ohio Brass Company,** Mansfield, Ohio, with headquarters at Chicago, has been promoted to district sales manager in charge of steam road and electrification sales with the same headquarters, to succeed F. E. Johnson, deceased.

The American Steel Foundries is now operating the **Galesburg Malleable Castings Company,** Galesburg, Ill., which it purchased several years ago, and which it has been operating as an independent company. It will be known as the Galesburg works of the American Steel Foundries.

The American Hoist & Derrick Company, St. Paul, Minn., has appointed **F. E. Bauer, Jr.,** export sales manager with office at 50 Church street, New York City. Mr. Bauer has represented the American Hoist & Derrick Company in foreign fields for many years. The company has opened a branch office at 139 Townsend street, San Francisco, Cal., in charge of **Boyd Nixon.**

Samuel Higgins has retired as a director of the **Vapor Car Heating Company, Inc.**, Chicago, and **R. P. Cooley** has been elected in his place. The position of vice-president as formerly occupied by Mr. Higgins has been abolished. Mr. Higgins will continue to have an office with the Vapor Car Heating Company, Inc., 9 Park Place, New York City.

At a recent meeting of the board of directors of the **Colorado Fuel & Iron Company**, at Denver, Colo., **J. F. Welborn** resigned as president and was elected chairman of the board; **Arthur Roeder** was elected president and the resignation of **J. B. Marks** as executive vice-president was accepted and that office remains vacant.

The Westinghouse Electric International Company, New York, plans to have the future sale in France of Westinghouse Electric products conducted by the **Westinghouse Electric Company of France**, which has been organized under the laws of the state of Delaware. No manufacturing facilities in France are contemplated by the newly organized company. The officers and directors of the company have not as yet been elected.

Ross F. Hayes, who during the past five years has been engaged as manufacturers' agent, railroad supplies, at New York, has become connected with the **Adams & Westlake Company** as representative, in charge of eastern sales of Rex car specialties. Mr. Hayes was formerly for many years with the Curtain Supply Company as eastern manager at New York, and later as general sales manager at Chicago. The Curtain Supply Company was consolidated about two years ago with the Adams & Westlake Company. Mr. Hayes now goes to the Adams & Westlake Company at its New York office, 50 Church street.

George H. Weiler has been appointed secretary-manager of the **Forging Manufacturers Association**, with headquarters at the Grand Central Terminal, New York City. This association embraces the major manufacturers of heavy forgings in this country. Mr. Weiler entered the service of the Brooks Locomotive Works, Dunkirk, N. Y., in 1898, and for the past 30 years has been associated with the American Locomotive Company at its New York office. He served in the accounting, engineering, manufacturing and sales departments of that company, his last position with it being that of manager of sales.

A plan of shop practice consulting service has been inaugurated by the **Malleable Iron Research Institute**, Union Trust building, Cleveland, Ohio, and **J. B. Deisher**, of Rochester, N. Y., a specialist in malleable iron practice, has been engaged as a shop practice engineer for the conduct of the work. The general scope of his services will embrace consultation and advice upon all phases of melting furnace and annealing oven practices and of molding practices including the gating and feeding of castings to insure soundness. Sectional shop practice meetings of shop men will also be held under the direction of Mr. Deisher. The Malleable Iron Research Institute has for many years conducted laboratory and extensive metallurgical research work under the direction of its consulting engineer, Prof. Enrique Touceda of Albany, N. Y.

Lima Locomotive Works, Inc., Annual Report

The annual report of the Lima Locomotive Works, Inc., for the year ending December 31, 1928, shows a net loss of $111,606 as compared with a net loss of $191,341 for the year 1927.

Gross sales for the past year totaled $6,558,598 as against 1927 sales of $6,218,760. After deduction of manufacturing costs, administrative and other expenses and an allowance for depreciation the operating loss for 1928 was $412,126. Other income amounted to $300,520 and thus reduced the net loss to the $111,606.

During the first half of 1928 two quarterly dividends, each of $1, were paid on the common stock, the only class of security which the company has outstanding. These dividends were not continued in the last two quarters of the year.

Selected items from the consolidated income sheet follow:

	1928	1927
Sales	$6,558,958	$6,218,760
Less: Manufacturing Cost (before depreciation)		
Administrative and other expenses	6,556,321	6,282,223
Depreciation	414,762	415,224
	6,971,084	6,697,467
Operating Loss	412,126	478,708
Other Income	300,520	287,367
Net Loss	111,606	191,341

With a view to the diversification of the company's products, the report states, the Ohio Power Shovel Company was acquired during the year. In commenting on the railway equipment industry the observation is made that this industry, after a long period of dullness, has recently shown signs of improvement. The unfilled orders on the books of the company at the time of the report amounted to $2,485,157.

Obituary

Matthew Griswold, who retired as manager of the Erie, Pa., works of the General Electric Company on January 1 of this year because of ill health, died at his home in Erie on February 10.

F. E. Johnson, who retired on January 1 as district sales manager in charge of railroad sales of the Ohio Brass Company with headquarters at Chicago, died on January 15 as a result of acute dilation of the heart. He had been associated with this company for over 20 years, first in Denver and later in the Chicago territory.

Construction

CANADIAN PACIFIC. — This company plans to apply to the next session of federal parliament for charter rights to construct a railroad between Kootenay Landing, B. C., and Proctor, about 30 miles, along the west shore of Kootenay Lake. The railroad has also asked to issue $1,500,000 of securities to cover the cost of construction.

CHESAPEAKE & OHIO.—This company will receive bids up to about February 21, for the construction of its new car repair shop to be built at Russell, Ky. This contract will involve the building of a rivet shop, steel car shop, store house, wheel shop, power house, paint shop, locker building, truckways and turntables. The entire improvement at Russell will cost approximately $3,927,000.

CHICAGO & NORTH WESTERN.—The Interstate Commerce Commission has authorized this company to extend its Marenisco branch in Gagebic County, Mich., 4.3 miles; estimated cost, $121,466.

CHESAPEAKE & OHIO.—This company plans the construction of light repair tracks which will have a capacity of 133 cars at Peru, Ind., at a cost of $90,500 as part of its general improvement program for 1929. At the same point $22,000 will be expended for the relocation of the freight station and the construction of additional freight station facilities. Other projects include the construction of a one-story brick passenger station at Paintsville, Ky., at a cost of $71,400, a grade separation structure at Harrison Road, Miami, Ohio, at a cost of $104,500; second main track between Sciotoville, Ohio, and Wheeler, four miles, at a cost of $961,000.

GEORGIA.—This line has awarded a contract to the Claussen-Lawrence Construction Company, Augusta, Ga., for the construction of an oil house on its properties at Augusta. The project will cost approximately $25,000.

NATIONAL OF MEXICO.—At the close of 1928 this company had under construction or nearing completion improvements to buildings and roadway involving a total expenditure of about $1,222,000. The more important projects include construction of a locomotive repair shop at Nonoalco, D. F., which have 10 inspection pits and one general repair pit and cranes of 60 tons and 20 tons capacity, at a cost of $247,000; rearrangement of Colonia station, Mexico, D. F., to provide space for express storage and offices and additional capacity in the entrances, concourses and station facilities at a cost of $185,000; conversion of a two-story brick station building at Saltillo, Coah., into a concentration hospital at a cost of $49,000; conversion of a station building on the Durango division into a hospital at a cost of $16,000. Projects of lesser im-

portance, for which $765,100 has been expended, include the construction and reconstruction of stations and cattle pens, the construction and reconstruction of storehouses and warehouses, employees dwellings, and yard towers, paving of station grounds and construction of inspection pits.

NEW YORK CENTRAL.—This company has awarded contracts for construction work on its lines as follows: Installation of electric equipment in facilities building at Mott Haven, New York City, to Hixon Electric Company, New York; elimination of a grade crossing at Lake Clear Junction, N. Y., to Walsh Construction Company, Syracuse, N. Y.; reconstruction of a bridge at Port Morris, N. Y., to Leake & Nelson Co., Inc., Bridgeport, Conn.; construction of foundation for a grain drier, Pier 7, West New York, N. J., to Allen Spooner & Son, New York; construction of a signal station and repair shop, West Bergen, N. Y., Gorsline & Swan Construction Company, Rochester, N. Y.; paving, grading and repairing Twelfth avenue between Thirty-fourth and Thirty-seventh streets, New York to Sicilian Asphalt Paving Company, New York; construction of a Pullman service building, Buffalo, N. Y., to E. P. Muntz, Inc., Buffalo, N. Y., and electric wiring for express garage, miscellaneous space under plaza, etc., Buffalo, to Robertson Electric Construction Company, of Buffalo.

PENNSYLVANIA.—This company and the city of Cincinnati, O., will share the cost of constructing a viaduct over the railroad's tracks, which will eliminate grade crossings at Beechmont and Eastern avenues, at Linwood road and Hutton street in that city. Of the total cost of the structure of $746,000, $484,900 will be paid by the Pennsylvania.

PENNSYLVANIA. — This company has awarded a contract to Gibbs & Hill, Inc., New York, for the enclosure of the exit concourse at the Pennsylvania station in New York at an approximate cost of $150,000. A contract also has been let to the Franklin Brothers Company, Akron, O., for the razing of the old buildings of the International Harvester Company and Whitman Barnes Company between Forge and Carrol streets in Akron. This project will involve an expenditure of about $27,000.

ST. LOUIS SOUTHWESTERN.—This company plans to expend $3,683,300 during 1929 for the revision of line and reduction of grades between Mt. Pleasant, Tex., and Waco. Additional yard facilities at Tyler, Tex., will involve an expenditure of $621,000 and $300,000 will be spent for improvements to shops at Pine Bluff, Ark., and Tyler.

WESTERN PACIFIC.—Examiner O. D. Weed of the Interstate Commerce Commission, in a proposed report, has recommended to the commission that it deny the application of this company for a certificate for the construction of a line from Brack, Calif., eastward about 3.5 miles.

Financial

BALTIMORE & EASTERN. — *Trackage Rights.*—The Interstate Commerce Commision has authorized this company to operate under trackage rights over the line of the Delaware Railroad between Queen Anne, Md., and Eastern, 12.5 miles.

BOSTON & MAINE.—*Dividends on Unstamped Stock.*—The directors of this company have voted to holders of unstamped first preferred shares a dividend which clears up the accruals on that stock. The dividend is payable February 28, to stock of record February 15. The Board has obtained subscription to an issue of $2,400,000 of 3-year 5 per cent general mortgage bonds, to be dated March 1. The Interstate Commerce Commission and the stockholders will be asked to authorize this issue, which will reimburse the treasury for capital expenditures. These dividends, and the number of unstamped shares outstanding of each class, are: class A, $21.50, 50,211 shares; Class B, $34.40, 18,137 shares; class C, $30.10, 15,477 shares; Class D, $43.00, 11,261 shares; Class E, $19.35, 140 shares. The holders of the unstamped first preferred stock together with holders of small amounts of the common and preferred shares, had refused to join in the company's plan of reorganization which became effective on September 1, 1926, reserving their legal rights to full payment of accrued dividends. Those stockholders who participated in the reorganization, surrendering one-half of their back dividends, reserved their right to the other half under a provision by which they may share equally with common stockholders in any dividends that may be declared after 6 per cent has been paid on the common stock in any one year.

BUFFALO, ROCHESTER & PITTSBURGH.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $756,000 of consolidated mortgage 4½ per cent bonds, to reimburse its treasury for expenditures for additions and betterments.

CANADIAN NATIONAL.—*Grand Trunk Claims.*—The Canadian Departments of Railways and Justice at Ottawa is giving consideration to a petition of rights filed on behalf of the junior shareholders of the old Grand Trunk Railway looking to the restitution of their interest in the property now incorporated in the Canadian National. They claim they were not fairly treated when the government took over the Grand Trunk, as they were not allowed anything by the arbitrators, Sir Walter Cassels, Hon. W. H. Taft, and Sir Thomas White. Their investment amounted to some $180,000,000. They allege the act passed by the Canadian Parliament was ultra-vires, and are asking for a fiat from the Crown to establish their claim in the law courts. This, it is reported, is likely to be granted.

CANADIAN NORTHEASTERN.—*Increase in capitalization.* This company plans to introduce into the present session of the British Columbia legislature a bill which will permit an increase in its capital stock from $2,000,000 to $10,000,000, and in its bonded indebtedness from $35,000 to $50,000 per mile.

CHESAPEAKE & OHIO.—*Accounting for Rebuilding Cars.*—The Interstate Commerce Commission has assigned for hearing before Director Mahaffie of its Bureau of Finance on February 25 a question regarding the method of accounting for expenditures by the C. & O., in rebuilding certain freight cars.

CHICAGO, NORTH SHORE & MILWAUKEE.—*I. C. C. Declines to Decide on Issue of Securities.*—The Interstate Commerce Commission has dismissed a complaint filed by a committee of holders of securities issued by this company, asking it to adjudicate the question as to whether it has jurisdiction over the issue of securities by the company. The commission held that a complaint which does not seek affirmative relief but merely asks an expression of opinion as to whether section 20a of the interstate commerce act has been violated by the issue of securities without first having obtained authority from the commission does not present a matter properly before the commission for decision. The complaint had been filed for the purpose of determining the rights and status of complainants as holders of stock issued by defendant and there had been some expectations that the commission might issue a decision as to its jurisdiction over security issues by electric railways which might have an effect on the status of large amounts of securities issued by such companies.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds.* — The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $869,000 of first and general mortgage 6 per cent bonds, Series B, in partial reimbursement of capital expenditures, bonds to be held in the company's treasury.

CHICAGO, ROCK ISLAND & PACIFIC.—*Dividend Increase.*—The board of directors of this company has declared a quarterly dividend of $1.75, on the common stock of this company, payable to holders of record March 8. This action raises the regular dividend on this stock from $6 per annum to $7.

GENESSEE & WYOMING.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure authentication and delivery of $400,000 of 5 per cent first mortgage bonds to be issued under a new first mortgage to be dated April 1, 1929, and maturing in twenty years. The bonds will be held in the treasury pending arrangements made for their sale or may be usel as collateral security for a short time loan. On April 1 the company has to meet a maturity of $459,000 of bonds, part of which will be made from bonds in its treasury.

ILLINOIS CENTRAL. — *Abandonment.* — This company has applied to the Interstate Commerce Commission for authority to abandon its Tiger Tail-Mengelwood branch, 16.38 miles, from Deer to Tiger Tail and from Stevens Junction to Mengelwood, Tenn.

MISSOURI PACIFIC.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for the issue and sale of $7,185,000 of equipment trust certificates for which bids will be asked, to be used in connection with the purchase of equipment to the amount of $9,595,000.

NORTHWESTERN PACIFIC.—*Abandonment.*—The Interstate Commerce Commission has authorized the abandonment of the line from Point Reyes to Monte Rio, Calif., 36.48 miles.

PERE MARQUETTE. — *Extra Dividend.* — The directors of this company have declared an extra dividend of $2 per share on the common stock of this company, payable to holders of record March 8. A similar extra dividend was paid in April, 1928.

RAILWAY EXPRESS AGENCY.—*Incorporated.*—The Interstate Commerce Commission has issued an order authorizing railway officers to serve as directors and officers of this company, formed to take over the business of the American Railway Express Company, in addition to offices which they have previously been authorized to hold. W. B. Storey, president of the Atchison, Topeka & Santa Fe, was named as president of the express agency and the following as vice-presidents and directors: Marcus L. Bell, Joseph P. Blair, Edward G. Buckland, Robert J. Cary, Henry W. Clark, Patrick E. Crowley, Charles Donnelly, Lawrence A. Downs, Clarence B. Heiserman, Elisha Lee, F. C. Nicodemus, Jr., and William H. Williams.

SARDIS & DELTA.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon as to interstate and foreign commerce its line extending from Sardis, Miss., to Baptist, 13.6 miles.

ST. LOUIS-SAN FRANCISCO.—*Dividend Increase.*—The board of directors of this company has declared a quarterly dividend of $2 on the common stock payable April 1 to holders of record of March 1, thereby raising the regular rate per annum from $7 to $8.

TOLEDO TERMINAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $500,000 of first mortgage 4½ per cent bonds to reimburse its treasury for capital expenditures. The bonds will mature in 1957. No arrangements have been made for their sale but the Commission stipulates that they must be sold at competitive bidding at not less than 92, which would make the cost to the railroad 5.028 per cent.

YAZOO & MISSISSIPPI VALLEY.—*Bridge Lease.*—This company has applied to the Interstate Commerce Commission for authority to lease and use the bridge now being constructed across the Mississippi river at Vicksburg, Miss., by the Vicksburg Bridge & Terminal Company, discontinuing the use of the transfer boats of the Louisiana & Mississippi River.

Dividends Declared

Chicago, Rock Island & Pacific.—Common, 1¾ per cent, quarterly, payable March 30 to holders of record March 8.

New York, New Haven & Hartford.—Common, $1.00; Preferred 1¾ per cent, both payable April 1 to holders of record February 28.

Pere Marquette.—Common, 1¼ per cent, quarterly; Common, extra, 2 per cent, both payable April 1 to holders of record March 8a; Prior Preference, 1¾ per cent, quarterly; 5 per cent Preferred, 1¾ per cent, quarterly, both payable May 1 to holders of record April 5a.

St. Louis-San Francisco.—Common, 2 per cent, quarterly, payable April 1 to holders of record March 1.

Average Prices of Stocks and of Bonds

	Feb. 13	Last week	Last year
Average price of 20 representative railway stocks.	133.65	136.81	116.63
Average price of 20 representative railway bonds..	91.53	92.00	97.10

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Huntington & Broad Top Mountain	$3,920,700	1918
Chicago & Illinois Western	1,111,607	1918
Oklahoma City Junction	157,089	1919

Railway Officers

Executive

H. A. Worcester, vice-president of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, has also been elected president of the Central Indiana.

John McCray, assistant to the vice-president and general manager of the Detroit & Mackinac, has been elected second vice-president and auditor, with headquarters as before at East Tawas, Mich.

Samuel E. Rauh, president of the Belt Railroad and Stock Yards Company at Indianapolis, Ind., has been elected chairman of the board of directors. **Charles S. Rauh,** executive vice-president, has been elected president to succeed S. E. Rauh. **Clyde C. Holstein,** traffic manager, has also been appointed anditor, succeeding **H. D. Lane,** resigned.

George S. Lee, traffic manager of the American Railway Express Company with headquarters at New York

George S. Lee

has been appointed vice-president in charge of traffic, with the same headquarters. Mr. Lee was born in Ashtabula County, O. He started as an expressman with Wells Fargo & Co., at Lincoln, Neb., in January, 1890. In 1893 he was transferred to St. Louis, Mo., as money clerk for the same company and in 1897 he went to Kansas City as cashier. He was appointed chief tariff clerk to the manager, Western department, in 1898 and when the express companies came under the jurisdiction of the Interstate Commerce Commission, in 1906, he was transferred to New York and appointed assistant traffic manager. He continued to serve in that position until July 1, 1918, when Wells Fargo & Co. merged with the other companies into the American Railway Express Company, at which time he was appointed traffic manager of the new company. He held the latter position until January 1, 1929, when he was appointed vice-president in charge of traffic.

T. H. Niles, general auditor of the Kansas, Oklahoma & Gulf and the Midland Valley, has been appointed assistant vice-president in charge of traffic and accounting, with headquarters as before at Muskogee, Okla., and the positions of general auditor and general freight agent at Muskogee have been abolished. **H. C. Douglas,** assistant auditor, has been promoted to general auditor, with headquarters as before at Muskogee. **E. B. Harper** and **F. A. Hillhouse** have been appointed to the respective positions of auditor of disbursements and auditor of receipts, both with headquarters at Muskogee.

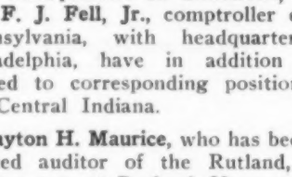
Financial, Legal and Accounting

Roger P. Almond has been appointed general attorney of the Kansas City, Mexico & Orient in Kansas and Oklahoma, with headquarters at Wichita, Kan.

George E. Walling has been appointed auditor and traffic manager of the Batesville Southwestern, with headquarters at Memphis, Tenn., succeeding **T. C. Merriam** and **R. Y. Du Quesnay.**

A. P. Burke, treasurer of the Cleveland, Cincinnati, Chicago & St. Louis, with headquarters at Cincinnati, Ohio, and **F. J. Fell, Jr.,** comptroller of the Pennsylvania, with headquarters at Philadelphia, have in addition been elected to corresponding positions on the Central Indiana.

Clayton H. Maurice, who has been appointed auditor of the Rutland, with headquarters at Rutland, Vt., was born in Cambridge, Vt., on August 23, 1886.



Clayton H. Maurice

He was graduated from Jeffersonville (Vermont) high school in 1905 and entered the service of the Central Vermont in January, 1906, as agent as Essex Center, Vt. He subsequently served as agent and telegraph operator at various points on the Central Vermont and in May, 1911, he was appointed joint agent for this road and the Rutland at Alburgh, Vt. He held that position until January 1, 1917, when he was appointed traveling auditor of the Rutland, with headquarters at Rutland. He became operating accountant on the staff of the vice-president and general manager in April 1, 1925, and in August, 1928, he was appointed acting auditor. Mr. Maurice served in that capacity until January 1, 1929, when he was appointed auditor of the Rutland and also of the Rutland Transportation Corporation, highway subsidiary of the Rutland Railroad.

Operating

James Murphy has been appointed assistant to the chief operating officer of the Chicago & Alton, with headquarters at Chicago.

W. B. Ham, trainmaster on the International-Great Northern at Houston, Tex., has been transferred to Palestine, Tex., succeeding **W. Y. Kemper,** who has been transferred to Mart, Tex.

D. C. Frederick has been appointed superintendent of car service of the Chicago & Illinois Midland, with headquarters at Springfield, Ill., and the position of car service agent held by **E. Sullivan** has been abolished.

M. E. Madden, superintendent of the Southern, with headquarters at Greensboro, N. C., has been appointed general superintendent of the Alabama district, with headquarters at Birmingham, Ala., succeeding **H. H. Vance,** deceased.

Joseph R. Brown, car accountant of the Lehigh and New England, with headquarters at Bethlehem, Pa., has been appointed superintendent of car service, with the same headquarters. The position of car accountant has been abolished.

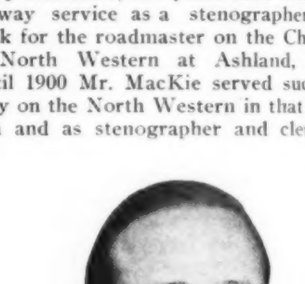
Clark Hungerford, superintendent of the Mobile division of the Southern, with headquarters at Selma, Ala., has been appointed superintendent of the Georgia Southern & Florida, with headquarters at Macon, Ga., succeeding J. T. Moon, transferred. **G. W. Adams** will succeed Mr. Hungerford as superintendent of the Mobile division.

A. R. Miller, freight train master of the St. Louis Terminal division of the Missouri Pacific, with headquarters at St. Louis, Mo., has been appointed acting superintendent of the same division with headquarters at the same point, succeeding **W. R. Petty,** who has been granted a leave of absence. **J. Meadows** has been appointed acting freight train master of the St. Louis Terminal division, succeeding Mr. Miller. **W. L. Yowell** has been appointed acting freight trainmaster of the St. Louis Terminal division, with headquarters at St. Louis, succeeding **R. H. McCullough,** who has been granted a leave of absence.

H. A. DeButts, superintendent of the Washington division of the Southern, with headquarters at Alexandria, Va., has been appointed superintendent of the Danville division, with headquarters at Greensboro, N. C., succeeding **M. E. Madden,** transferred. **S. S. Brooks,** superintendent of the Asheville division, with headquarters at Asheville, N. C., will succeed Mr. DeButts as superintendent of the Washington division. **W. F. Cooper,** superintendent at Columbia, S. C., will succeed Mr. Brooks as superintendent of the Asheville division. **F. M. Hair,** superintendent at Charleston, S. C., has been transferred in the same capacity to the Columbia division, with headquarters at Columbia, S. C. He will in turn be succeeded by **J. T. Moon,** now superintendent at Macon, Ga.

John D. MacNutt, acting superintendent of the Canadian National, with headquarters at Campbellton, N. B., has been appointed superintendent, with the same headquarters. Mr. MacNutt was born on February 8, 1873, at Lower Stewiacke, N. S. He entered the service of the Canadian National in December, 1889, as telegraph operator, remaining in that position until 1890. From the latter date until 1893, he served as operator and agent at various stations, then being appointed relief dispatcher successively at Truro and Moncton. From 1898 to 1916, he served as dispatcher and chief dispatcher at different points. He was then appointed inspector of transportation at Moncton, serving in that capacity until 1920. He became assistant superintendent, with headquarters at Truro, in 1920, later serving in the same position at Halifax. In 1923 Mr. MacNutt was appointed assistant superintendent at Campbellton and on December 27, 1928, he was appointed acting superintendent, serving in that capacity until his recent promotion to the position of superintendent.

Fred J. MacKie, who has been promoted to assistant general manager of the Coast lines of the Atchison, Topeka & Santa Fe, with headquarters at Los Angeles, Cal., has been in the service of that railway for nearly 29 years. He was born at Hamilton, Ont., on April 1, 1879, and attended the Collegiate Institute at Galt, Ont. When 16 years old he worked as a reporter on the Galt Daily Reformer, two years later entering railway service as a stenographer and clerk for the roadmaster on the Chicago & North Western at Ashland, Wis. Until 1900 Mr. MacKie served successively on the North Western in that position and as stenographer and clerk to



Fred J. MacKie

the superintendent of bridges and buildings, the chief dispatcher and the assistant superintendent and as clerk, stenographer, timekeeper and pay clerk on the Union Pacific at Cheyenne, Wyo. In July, 1900, he entered the service of the Santa Fe as stenographer and clerk for the general superintendent at Los Angeles, later serving in the same capacity for the general superintendent at La Junta, Colo., and for the second vice-president at Chicago and as chief clerk to the superintendent at Chillicothe, Ill., and to the general superintendent at Topeka, Kan. Mr. MacKie was promoted to trainmaster of the Rio Grande division at San Marcial, N. M., in October,

1910, and in January, 1912, he was transferred to the Arkansas River division at La Junta, Colo. In June, 1919, he was advanced to assistant superintendent of the Panhandle division at Wellington, Kan., where he remained until November, 1919, when he was promoted to superintendent of the Slaton division at Slaton, Tex. From August, 1920, to November, 1928, he was successively assistant to the general manager, in connection with labor matters, and superintendent of the Plains division at Amarillo, Tex., then being appointed acting assistant general manager of the Coast lines. His promotion to assistant general manager became effective on February 1.

Traffic

J. A. Werne, commercial agent for the Great Northern at New York, has been promoted to general agent at that point.

Jerry Murray, commercial agent for the Missouri & North Arkansas at Tulsa, Okla., has been promoted to general agent at the same point.

William F. Hummel, general agent for the Elgin, Joliet & Eastern at Chicago, and **K. M. Guenther** have been appointed assistant general freight agents at that point.

R. L. Bradley, in addition to serving as auditor of the Central Indiana, with headquarters at Muncie, Ind., has been appointed general freight and passenger agent.

W. H. Casson has been appointed general agent of the Virginian, with headquarters at Pittsburgh, Pa., succeeding **T. W. Partlan**, who has resigned to engage in other business.

Merle W. Dancy, assistant general freight and passenger agent of the Chicago & Alton, has been appointed executive general agent, with headquarters as before at St. Louis, Mo., in charge of traffic and operation in the St. Louis district.

W. T. Tannehill, chief of the traffic bureau of the New York Central at Chicago, has been promoted to assistant to the freight traffic manager, with headquarters at New York. **Charles Coughlin**, general agent of the freight department at Chicago, has been promoted to chief of the traffic bureau, succeeding Mr. Tannehill.

A. R. Mitchell, general southwestern agent of the Kansas City, Mexico & Orient at Dallas, Tex., has been appointed general agent at Wichita Falls, Tex. **Grey Thompson** has been appointed general agent at Kansas City, Mo. **J. P. Alvis** has been appointed general agent at Wichita, Kan.

G. F. Rung, northern general agent of the Alton & Eastern and the Litchfield & Madison at St. Louis, Mo., has been transferred to Chicago, with the title of general agent. **H. W. Stigler**, northern lumber agent at Memphis, Tenn., has been appointed general agent at the same point. **G. J. Tremaine** has been appointed general agent at New Orleans, La.

F. H. Hocken, assistant general freight and passenger agent of the Western Pacific at Salt Lake City, Utah, has been transferred to San Francisco, Cal., to succeed **W. J. Shotwell**, deceased, and his title has been changed to assistant general freight agent. The position of assistant general freight and passenger agent at Salt Lake City has been abolished. **P. J. Peckens** has been appointed general agent at Salt Lake City.

F. T. Hendry, general agent of the freight and passenger departments of the Atchison, Topeka & Santa Fe at Detroit, Mich., has been appointed general agent of the passenger department at that point. **R. C. Smith**, general agent at Philadelphia, Pa., has been transferred to Detroit, with jurisdiction over the freight department. **E. M. Troxell**, traveling freight agent at Philadelphia, has been promoted to general agent at that point, succeeding Mr. Smith.

H. G. Powell, traffic manager of the steam lines of the Illinois Terminal, with headquarters at Alton, Ill., has been promoted to general traffic manager of the system, with headquarters at St. Louis, Mo. **H. A. Touhy**, traffic manager of the electrified lines, has been promoted to freight traffic manager, with headquarters as before at St. Louis. **E. L. Bodge**, coal traffic manager, has been promoted to assistant freight traffic manager with headquarters at St. Louis.

Roy A. Pearce, general agent in the passenger department of the Chicago & Alton at Chicago, has been promoted to general passenger agent, with headquarters at the same point. **W. D. Cornell**, district passenger agent at Cincinnati, Ohio, has been promoted to general agent at Chicago to succeed Mr. Pearce. **Dan M. McNamara**, general agent in the passenger department at St. Louis, Mo., has been promoted to assistant general passenger agent, with headquarters at the same point. **P. K. Walden**, commercial agent at Milwaukee, Wis., has been promoted to assistant general freight agent, with headquarters at Chicago.

George Morton, who has been promoted to freight traffic manager of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been in the service of that railway for 46 years. He was born on March 21, 1866, at Burlington, Iowa, and entered railroad service as a clerk in the general freight office of the Burlington & Missouri River (now the Chicago, Burlington & Quincy) at Omaha, Neb. Later he was advanced successively through the positions of rate clerk, secretary to the general freight agent and chief clerk to the general freight agent and on October 1, 1900, he was promoted to assistant general freight agent of the Burlington at Chicago. Mr. Morton was

George Morton

further promoted to assistant freight traffic manager, with headquarters at Chicago, on March 1, 1920, his promotion to freight traffic manager being effective on January 1.

H. G. Snyder, formerly special representative of the general manager of the St. Louis-San Francisco at Springfield, Mo., has been appointed district traffic manager at Oklahoma City, Okla. **Harrison C. Conley**, assistant general freight agent at Oklahoma City, retired from active service on January 1 upon reaching the company's age limit of 70 years. He had been in the service of the Frisco for nearly 47 years. **L. W. Price**, division passenger agent at Oklahoma City, has been promoted to general agent at that point. **M. G. Buffington**, commercial agent at Oklahoma City, has been promoted to assistant general agent at the same point. **J. C. Midyette**, district freight and passenger agent at Jacksonville, Fla., has been promoted to general agent at that point, succeeding **C. C. Mosley**, who resigned on January 1, **H. F. Stender**, traveling freight and passenger agent at Birmingham, Ala., has been promoted to general agent at Jacksonville.

Engineering, Maintenance of Way and Signaling

C. H. Cravens has been appointed division engineer of the Kansas City, Mexico & Orient of Texas, with head quarters at San Angelo, Tex.

Ralph R. Strothers, assistant engineer on the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, Minn., has been promoted to assistant chief engineer, with headquarters at the same point, succeeding **Horace P. Padley**, who retired from active duty under the pension rules of the company on February 1 after 30 years of railway service.

Mr. Padley, born at Lincoln, England, on January 2, 1859, was educated in private schools in that country to be an engineer and served for a short time in the British Army. In 1886 he came to the United States, and in 1887 he was appointed superintendent of construction of a contracting company at Ashland, Wis., after working for a short time on a ranch in the West. In 1890 Mr. Padley was admitted to partnership in this contracting company, serving for five years during this period as a captain in the Wisconsin National Guard. He saw active service in Cuba during the Spanish-American war and upon returning to the United States he became a transitman on the Omaha in January, 1889. Ten years ago he was promoted to assistant engineer, with headquarters at St. Paul, being further advanced to principal assistant engineer, with headquarters at the same point, in October, 1913. Mr. Padley had been assistant chief engineer of the Omaha since March, 1920.

Purchases and Stores

J. J. McDonald, chief inspector of fuel, ties and timber of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, retired under the pension rules of the company on February 1.

Mechanical

G. F. Tipton, shop superintendent of the Southern, with headquarters at Knoxville, Tenn., has been appointed master mechanic, with headquarters at Bristol, Va., succeeding **M. R. Brockman,** transferred.

H. G. Stubbs, master mechanic of the Southern, with headquarters at Macon, Ga., has been transferred in the same capacity to Princeton, Ind., succeeding **Frank Johnson,** resigned. **M. R. Brockman,** master mechanic at Bristol, Va., will replace Mr. Stubbs as master mechanic at Macon, Ga.

J. T. Fite, general foreman in the car department of the St. Louis-San Francisco, at Springfield, Mo., has been promoted to mechanical inspector of the system, with headquarters at the same point. Mr. Fite succeeds **John Forster,** who retired from active service on January 1. From 1898 to 1900 Mr. Forster was superintendent of motive power of the Colorado & Southern at Denver, Colo., and from 1902 to 1924 he was master mechanic on the Frisco at Kansas City, Mo.

Fred A. Isaacson, acting engineer of car construction of the Atchison, Topeka & Santa Fe, has been promoted to engineer of car construction, with headquarters at Chicago. Mr. Isaacson has been connected with the Santa Fe for 24 years. He was born at Topeka, Kan., on November 12, 1884, and after completing two years of high school, he became a mechanic apprentice in the car shops of the Santa Fe at that point in 1900. He left railway service in 1905 to engage in other business, during that time completing courses in mechanical and electrical engineering. In January, 1910, Mr. Isaacson re-entered the service of the Santa Fe as a draftsman on signal construction in the office of the signal engineer at Topeka, being transferred to the office of the mechanical engineer in the following year. He was later advanced to pattern recorder and in October, 1914, was promoted to chief

Fred A. Isaacson

locomotive draftsman. In January, 1922, he was further promoted to assistant mechanical engineer, with headquarters at Topeka, where he remained until April, 1928, when he was transferred to Chicago, in charge of inspection on new passenger and freight cars, motor inspection cars and locomotive tenders. On July 1, Mr. Isaacson was appointed acting engineer of car construction, his promotion to engineer of car construction becoming effective on February 1.

Obituary

Charles L. Addison, assistant to the vice president of the Long Island with headquarters at New York, died suddenly on February 13 of heart disease.

Alexander H. Stevens, who retired as general agent for the St. Louis-San Francisco at San Francisco, Cal., in November, 1928, died at his home in that city on January 5.

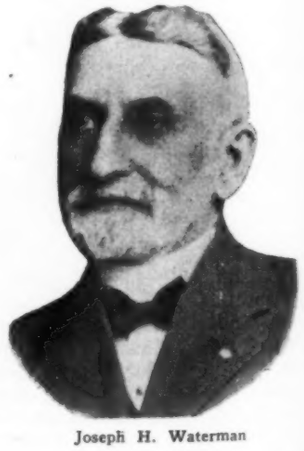
Bracey Curtis, treasurer of the Kansas City, Mexico & Orient in Mexico, with headquarters at Nogales, Ariz., died at his home in that city on January 31 from an attack of pneumonia.

Thomas G. McClellan, who resigned as general western agent of the Nashville, Chattanooga & St. Louis, with headquarters at St. Louis, Mo., in October, 1928, died at San Antonio, Tex., on February 4.

Charles B. Gillespie, who was vice-president of the Sugar Land Railway from 1920 to 1923, died in a hospital at Dallas, Tex., on February 7. Mr. Gillespie had been in the newspaper business the greater part of his life and at the time of his death he was vice-president and managing editor of the Houston (Tex.) Chronicle.

Robert Lee Baugh, former purchasing agent of the Central of Georgia, died at the home of his son in Memphis, Tenn., on February 5 at the age of 80 years. Mr. Baugh served as acting purchasing agent of the Central of Georgia from 1901 to 1903 and as purchasing agent, with headquarters at Savannah, Ga., from 1903 to 1912. Since leaving railway service he had resided in Savannah, moving to Memphis in 1926.

Joseph H. Waterman, former superintendent of timber preservation of the Chicago, Burlington & Quincy, with headquarters at Galesburg, Ill., died at his home in that city on February 5. Mr. Waterman had been in railway service for nearly 47 years and at the time of his retirement on September 1, 1927, he had been connected with the Burlington for 46 years. He was born in 1853 near Albany, N. Y., and from 1877 to 1880 was engaged in the retail lumber business at Plattsmouth, Neb. On July 1 of the latter year he entered railway service as a freight trucker at the Burlington transfer station at Plattsmouth. During the following 30 years Mr. Waterman was advanced successively through the positions of foreman in the lumber yards of the stores department of the Burlington at Plattsmouth, foreman in charge of that yard, foreman in charge of the maintenance material yard at Lincoln, Neb.,



Joseph H. Waterman

storekeeper at Lincoln, and assistant general storekeeper at Omaha, Neb. On May 1, 1910, he was promoted to superintendent of timber preservation, with headquarters at Galesburg. In 1913 he was first vice-president of the American Wood-Preservers' Association and in 1915 he was president of the same organization. He was president of the American Railway Storekeepers' Association in 1910-1911 and in June, 1928, he was awarded a life membership in Division VI, Purchases and Stores, American Railway Association.